

July 1946

TECHNOLOGY REVIEW

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technology review

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ALUMINUM FORGINGS



POSTWAR DESIGNS COMBINE
STRENGTH WITH LIGHTNESS
FOR GREATER EFFICIENCY!

THE

HARVEY

METAL CORPORATION

HAROLD B. HARVEY '05 • *Engineers & Manufacturers* • SHERRY O'BRIEN '17

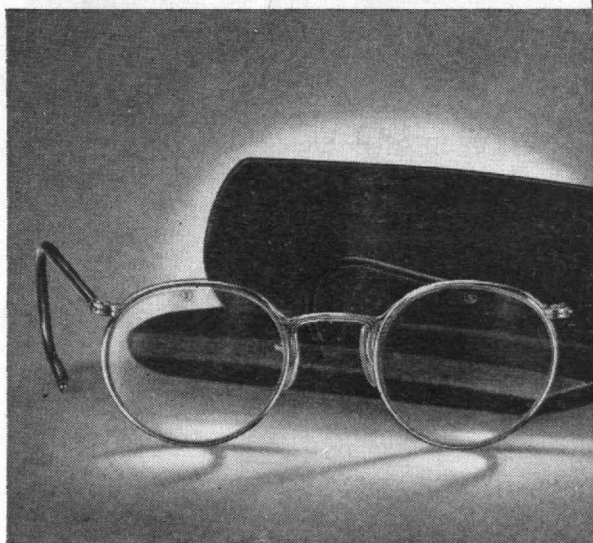
74th STREET and ASHLAND AVENUE • CHICAGO 36, ILLINOIS

FORGINGS IN ALUMINUM • BRASS • BRONZE • COPPER • MAGNESIUM • MONEL • ALLOYS

MACHINING FACILITIES

skilled men

wear safety goggles



and they
prefer A-O metal ful-vues for
comfort and appearance

*A-O Safety Goggles
Safeguard the Eyes
of Industry*

Skilled workers appreciate the comfort and good appearance of A-O Ful-vue Goggles. They provide all-angle vision and are shaped to conform to the orbit of the eye (thus, bringing the lenses closer to the face and leaving no unprotected area around the bridge of the nose). Made in three eye and three bridge sizes, with 6-curve Super Armor-plate Clear or Calobar lenses—with or without side shields. Your nearest A-O Safety Representative can supply you.

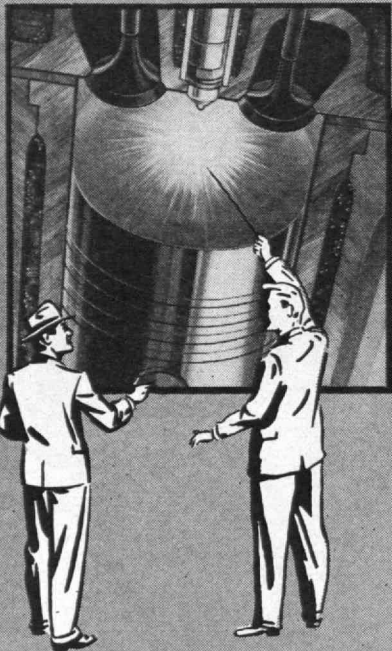
American  Optical
COMPANY

Safety Division

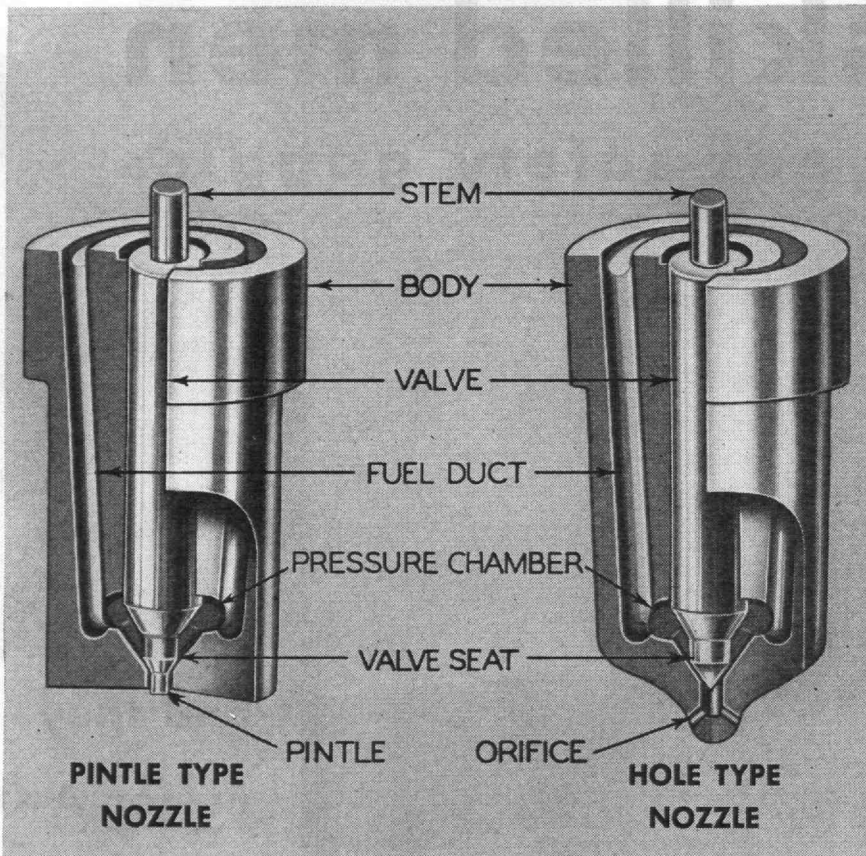
SOUTHBRIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL INDUSTRIAL CITIES

GOOD FUEL INJECTION

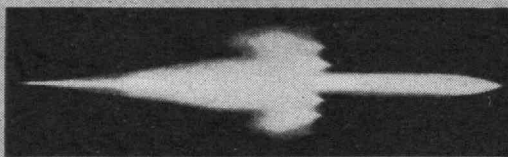
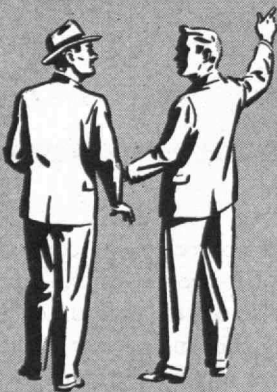
Requires a Tailored Spray



THE MAIN FUNCTION of an injection system is to deliver fuel to the engine cylinders in such a manner that it will burn efficiently. That's why the injection nozzle is so important. It must produce a spray that meets exactly the combustion-chamber requirements.



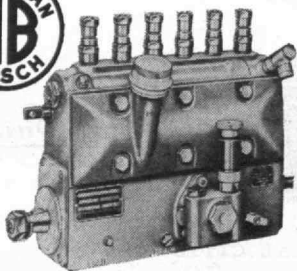
Tailoring is the art of producing the precise spray characteristic which the engine likes best. Tailoring know-how comes from long experience in correlating the selection of every part of the injection system for the single purpose of providing the engine with the ideal spray pattern.



THE CORRECT PATTERN PAYS ITS WAY. American Bosch Injection Equipment provides tailored fuel sprays to fit your Diesel's combustion chamber. That means fuel economy, power to suit the task at hand, and satisfactory performance under all operating conditions.



WRITE FOR A COMPLETE DIRECTORY OF AMERICAN BOSCH AUTHORIZED SERVICE STATIONS



AMERICAN BOSCH CORPORATION, SPRINGFIELD 7, MASS.

AMERICAN BOSCH

Diesel Fuel Injection

To do your surfacing jobs better **use NORTON DISC WHEELS**

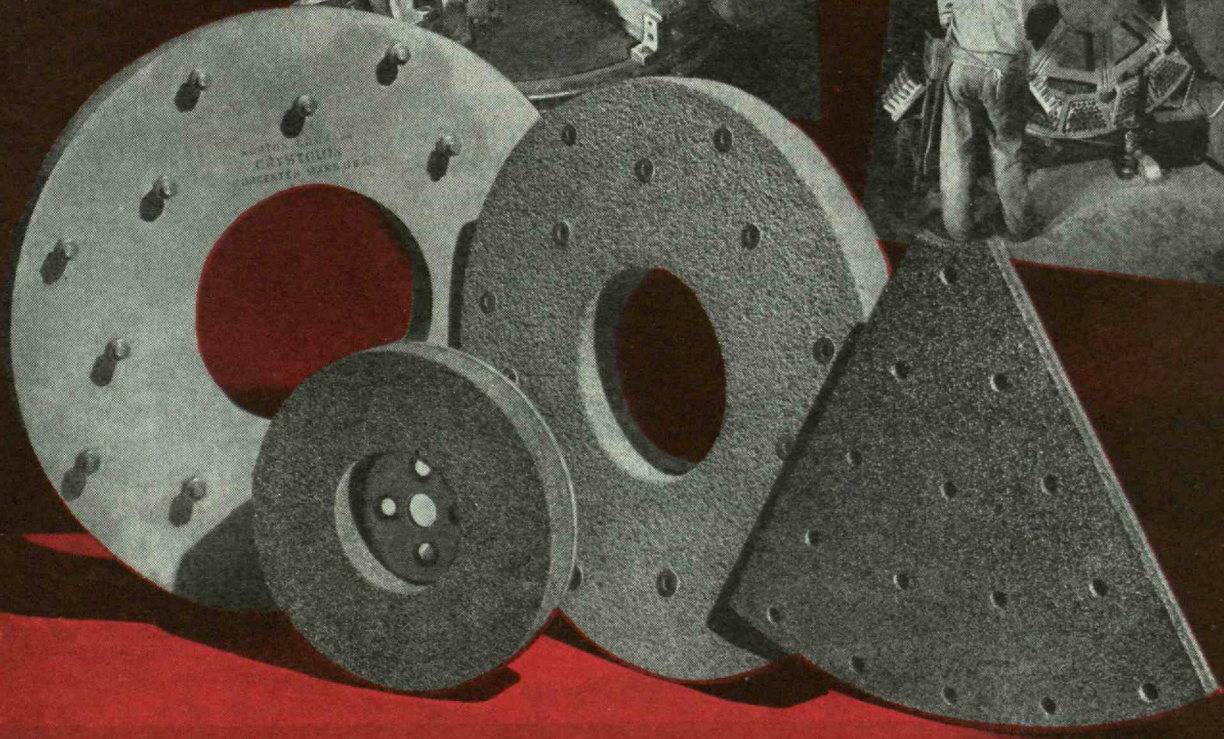
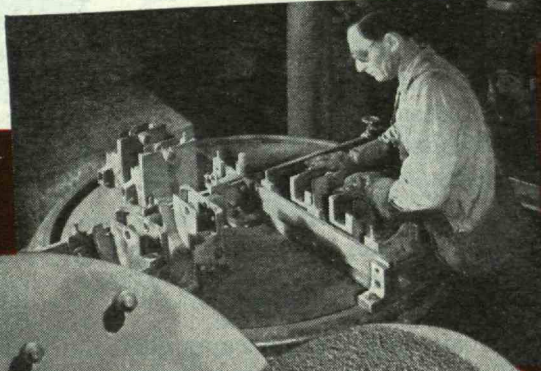
When a Norton abrasive engineer tackles your disc grinding jobs he's not limited to a few styles of discs—he has the complete Norton line of abrasives and bonds to choose from. As a result he can tailor the disc's grinding action to exactly meet your specific conditions—and that means lower surfacing costs.

And what's more, he can take advantage of all the newest Norton developments—such as free-cutting 57 Alundum abrasive and B-5 bond. On many disc grinding jobs, especially surfacing castings, this 57 Alundum, B-5 combination is showing remarkable results.

It will really pay you to let a Norton abrasive engineer make a survey of *all* your disc grinding jobs.

NORTON COMPANY
WORCESTER 6, MASS.

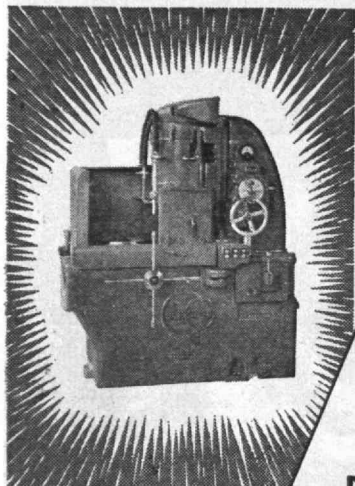
*Distributors in All
Principal Cities*



NORTON ABRASIVES

IF YOU MACHINE *FLAT SURFACES...*

these examples of actual production should interest you!



The Blanchard
No. 11 Surface
Grinder

A Forty-eight cast iron pump bodies, 6 inches diameter, are ground per hour, removing .012 inch of metal to limits of $\pm .0003$ inch $-.0001$ inch.

B Seventy-two cast iron ball bearing spacer rings 3 inches to 5 inches diameter are ground on both ends per hour, removing .025 inch of metal from each end, to limit for parallelism of .0002 inch.

C Fifteen alloy steel plates, $24\frac{1}{4}$ inches \times $5\frac{5}{8}$ inches and $1\frac{1}{2}$ inches are ground per hour, removing .015 inch of metal from each side, then finish grinding the first side removing .010 inch of metal, a total of .040 inch from the two sides, to limits of $\pm .00075$ inch.

D One semi-steel swivel table for Shaper is ground in one hour and thirty-five minutes, grinding six sides, removing $\frac{1}{8}$ inch of metal from each side. These tables are finish ground from rough castings $15\frac{1}{2}$ inches \times 16 inches \times 16 inches to limits of $\pm .005$ inch for dimensions and finished table must be square within .0015 inch in 16 inches.

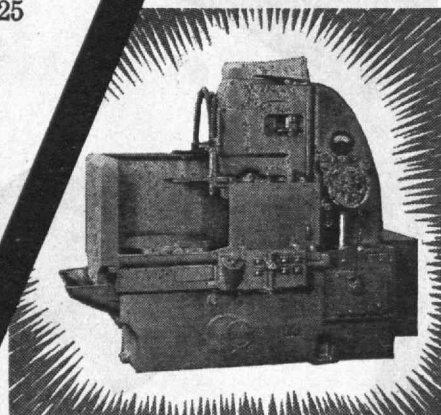
E 150 alloy steel pump plates, $2\frac{3}{8}$ inches \times $1\frac{7}{8}$ inches \times $\frac{1}{2}$ inch, are ground per hour on both sides, removing .009 inch of steel from each side, to limits of $\pm .00025$ inch.

F 109 forged, nickel steel airplane engine cams, $10\frac{3}{4}$ inches \times $8\frac{3}{4}$ inches \times $\frac{7}{8}$ inch are ground per hour on both sides, removing from .040 inch to .060 inch of metal from each side to limits of $\pm .001$ inch.



Send for your free book of "Work Done on the Blanchard", third edition. This new book shows over 100 actual jobs where the Blanchard Principle is earning profits for Blanchard owners.

The Blanchard
No. 18 Surface
Grinder



IF YOU MACHINE *FLAT SURFACES...*

bring your problems to,



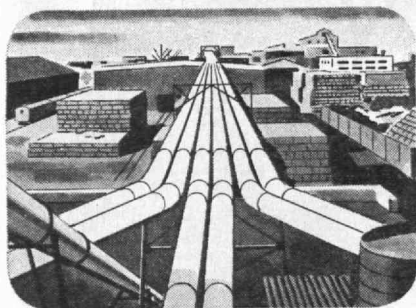
The **BLANCHARD** MACHINE COMPANY

64 STATE STREET, CAMBRIDGE 39, MASS., U. S. A.

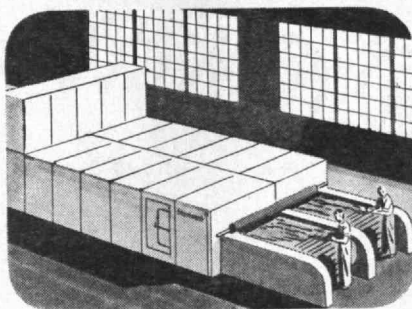
NOTHING WORKS BETTER THAN

AIR

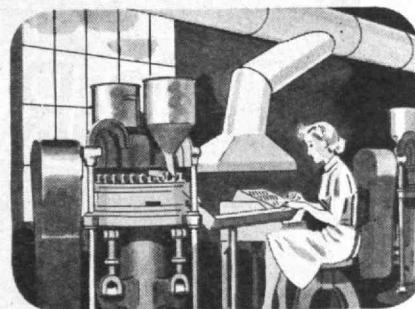
WHEN YOU HAVE PRODUCTION
PROBLEMS LIKE THESE



1. Ten thousand pounds of cork per hour—cleaned and then whisked more than a quarter of a mile from processing building to storage bins. Imagine what *that* used to cost in man-hours before this Sturtevant conveying system took over the job with "air at work."



2. It used to take 24 hours to dry the fur pelts that are used in making your felt hat. Today this huge Sturtevant dryer does the job in 15 minutes—another example of how "air at work" can help to step up production and cut costs.



3. At the tablet-forming machines in this drug plant, excess sulfa powder is recovered, dried, and conveyed to the packaging department with the help of Sturtevant "engineered air." Result? Better working conditions, better production—and thousands of pounds of sulfa powder saved each year.



4. Sturtevant air-conditioning helps to keep 'em rolling in this ball bearing plant, where precision is measured in microns. The complete system—including Precipitron*, the Westinghouse electronic air cleaner—safeguards product quality, results in fewer rejects, pays off in better working conditions and more efficient production.

WHEREVER AIR CAN DO A JOB—you can count on Sturtevant for the right answer. As a division of Westinghouse Electric, Sturtevant is the *only manufacturing source* that offers all three types of equipment . . . for air handling . . . air cleaning . . . air conditioning. That means one responsibility for the entire system . . . one engineering headquarters with unlimited selection of components . . . service facilities everywhere . . . plus important savings from buying a "one package" installation.

For further information, get in touch with the nearest Westinghouse or Sturtevant Branch Office, or write: B. F. Sturtevant Company, Division of Westinghouse Electric, Hyde Park, Boston 36, Mass.

Sturtevant
REG. U.S. PAT. OFF.
Puts Air to Work

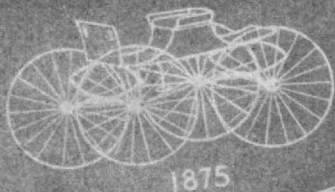
B. F. STURTEVANT COMPANY • DIVISION OF

Westinghouse
ELECTRIC

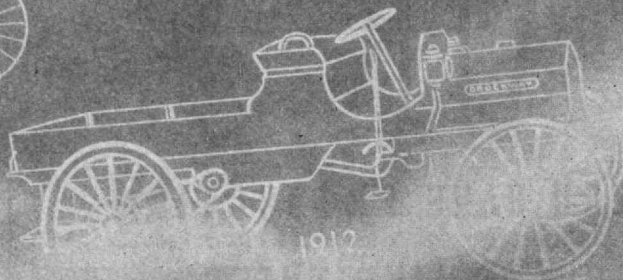
*Trademark registered in U.S.A.

HEATING • VENTILATING • PRECIPITRON

AIR CONDITIONING • DRYING • DUST AND FUME CONTROL • CONVEYING • MECHANICAL DRAFT

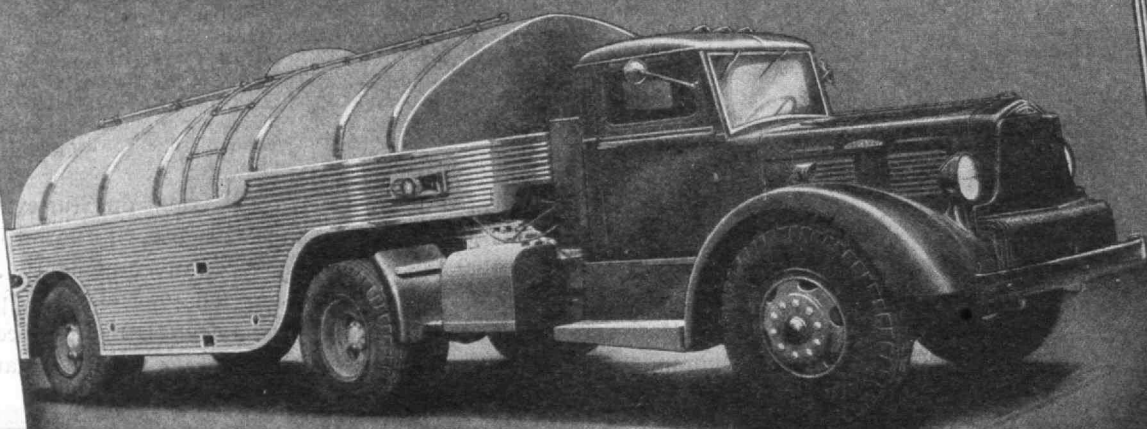


1875



1912

70

*Years of***BROCKWAY***Progress***BROCKWAY MOTOR COMPANY, INC.**

Manufacturers of

BROCKWAY MOTOR TRUCKS**FACTORY & GENERAL OFFICE: CORTLAND, NEW YORK**

NEW PLASTIC GARDEN HOSE

OUT in front, among the leaders of new postwar plastic products is GARDEN HOSE extruded by Sandee. Made of extremely tough vinyl type material in transparent and opaque green, this excellent product offers many superior advantages over old-fashioned rubber hose. Here are a few: feather weight, $\frac{1}{3}$ the weight of rubber hose; less bulk, easier to handle and store; runs more water; lasts longer, no cracks, no leaks,

no taping; unaffected by extreme atmospheric temperatures; resists oils, greases, alkalies, and solvents.

Once more, Sandee plastic research has added greatly to the improvement of a practical product. Chances are the skill and foresight of our technical staff can lend you valuable aid in applying extruded plastics to *your* manufacturing and merchandising problems. May we send you particulars?

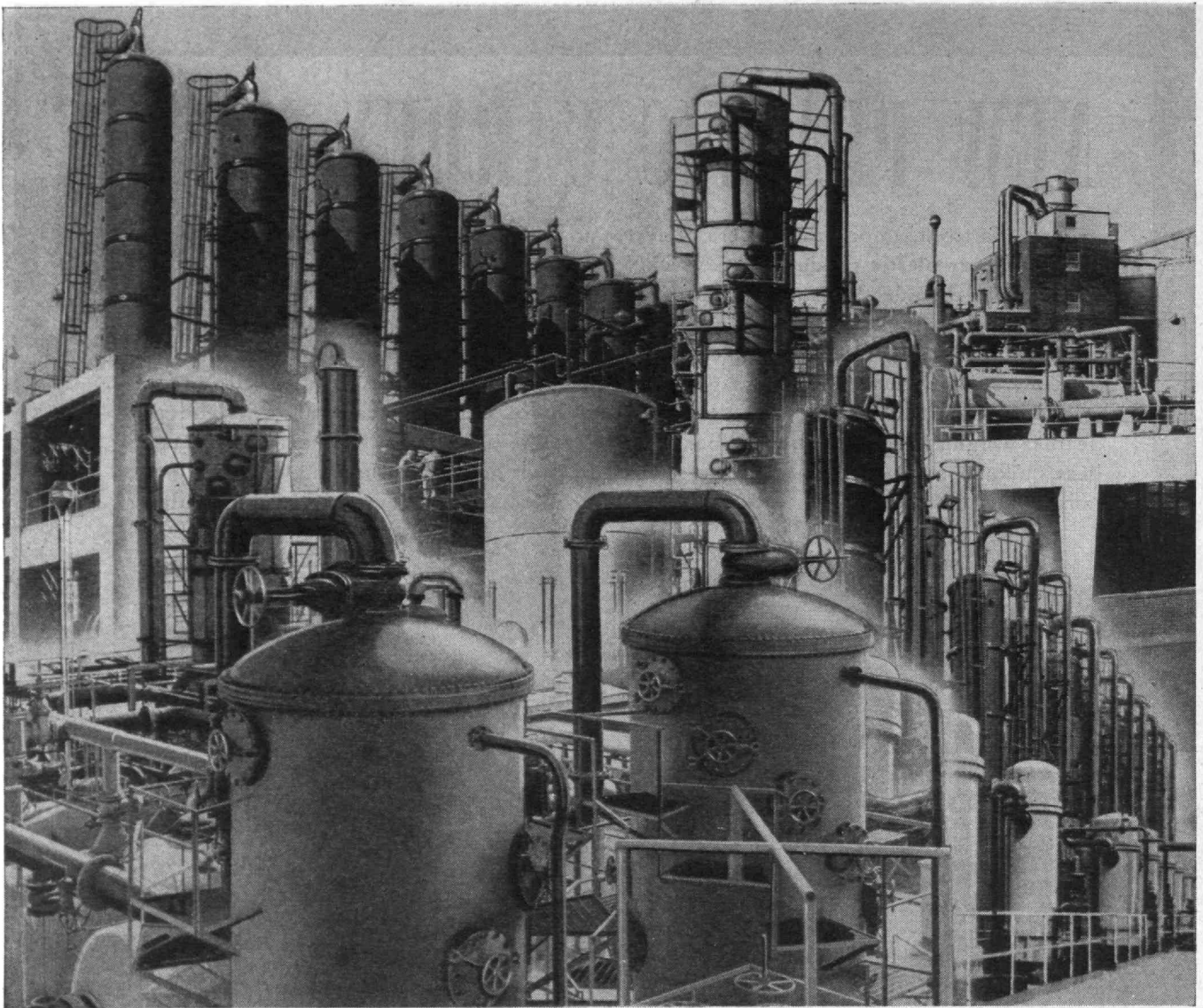


SALES REPRESENTATIVES IN 19 PRINCIPAL CITIES

Sandee Manufacturing Company

3945 NORTH WESTERN AVENUE • CHICAGO 18, ILLINOIS

EXTRUDED PLASTICS AND SPECIAL TOOLS



VULCAN has the organization
and experience for Development
of ***IMPROVED***
OPERATIONAL METHODS for the
CHEMICAL PROCESS INDUSTRIES

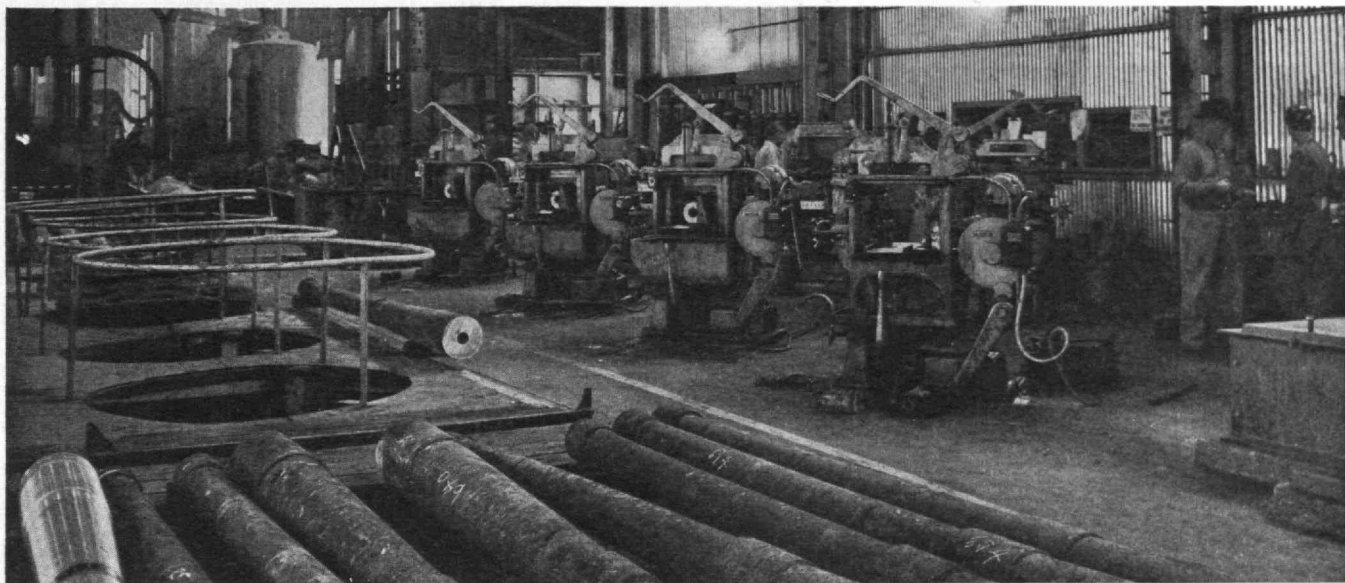
*Economic Analysis of
Requirements • Process
Development • Process
and Equipment Design •
Fabrication and Erection
• Initial Operation •*

For Production and Recovery of
ALCOHOLS, ORGANIC ACIDS, ESTERS,
ALDEHYDES, KETONES, ETHERS, GLYCOLS,
PHENOLS, HYDROCARBONS, CHLORINATED
HYDROCARBONS, ETC.

VULCAN

DISTILLATION • EVAPORATION • EXTRACTION
PROCESSES AND EQUIPMENT

THE VULCAN COPPER & SUPPLY CO., CINCINNATI, OHIO



FOR INDUSTRY

Carbon Black
Oil

Natural Gas

Natural Gasoline

Pumping Equipment

Pine Tar

Charcoal

Carotene

Chlorophyll

Swords to ploughshares might well describe what has taken place in the Cabot Shops in Texas. In wartime, Cabot quickly converted these shops so that big rifles could be made for the arsenal of democracy. Now those same shops have been reconverted to the tasks of peace. Once more they make pumps for the oil fields, and castings used in the Cabot plants for the manufacture of carbon black and natural gasoline.

CABOT CARBON CO.
TEXAS ELF CARBON CO.
GENERAL ATLAS CARBON CO.
CABOT SHOPS, INC.
VALLEY VITAMINS, INC.



GODFREY L. CABOT, INC.

77 FRANKLIN STREET • BOSTON 10, MASS.

TWO GREAT NEW LABORATORY INSTRUMENTS



BROWNING MODEL RH-10 STANDARD FREQUENCY CALIBRATOR

Full, accurate use of station WWV, the world's finest primary frequency and time standard, is obtained from the Browning Model RH-10 Standard Frequency Calibrator. The standard Browning RH-10 is pre-tuned for 5 and 10 megacycles per second reception, at sensitivities better than $\frac{1}{2}$ microvolt on either band. A dual filter system provides selection of either the 440 or 4000 cycle modulation of WWV for use as a primary frequency standard.

Checking equipment against station WWV, at accuracies up to one part in five million, the Browning Frequency Calibrator enables compari-

sons to be made in three general categories:

1. Precision radio frequency standards measurements.
2. Precision audio frequency standards measurements.
3. Precision time and pulse standards for physical measurements.

The Browning RH-10 consists of a high Q antenna transformer, a sharply tuned R-F amplifier, converter, oscillator, two IF stages, detector, selective amplifier output stages and a cathode ray zero beat indicator. Although normally supplied for 5 and 10 megacycles per second operation, any two combinations of 2.5, 5, 10, or 15 megacycles may be had on special order.

WRITE FOR DESCRIPTIVE LITERATURE

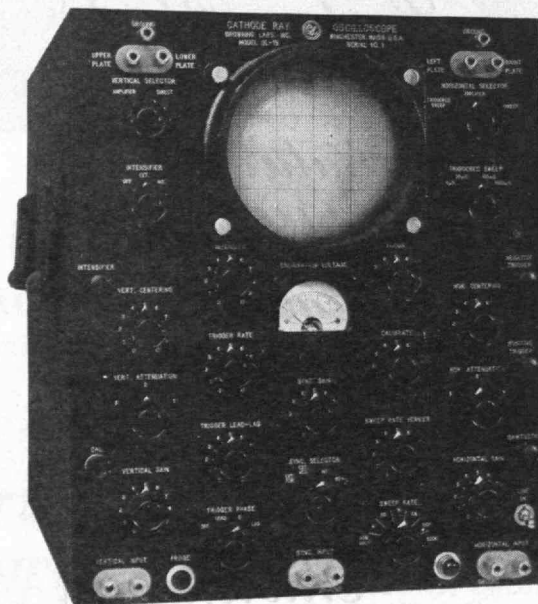
BROWNING MODEL OL-15 OSCILLOSCOPE

Designed for observing phenomena requiring extended range amplifiers and a wide variety of time bases, the Browning Model OL-15 Oscilloscope incorporates improvements that make it useful in numerous applications where ordinary oscilloscopes are inadequate.

For instance, the Browning OL-15 is particularly adaptable to television, radar and facsimile work, as well as with radio-frequency equipment where it is desirable to know actual r.f. waveform composition. The low repetition sweep gives visual observation when recurring phenomena of a few sweeps per second are encountered.

Suitable time base facilities for studying signals with a constant time difference, or those with an inconstant time separation between consecutive phenomena, are provided by the Browning OL-15. In general, the improved design and superior construction of the Browning OL-15 make it a highly flexible instrument for use in all laboratory work, production testing, or research applications.

WRITE FOR DESCRIPTIVE LITERATURE



BROWNING

LABORATORIES, INC.
WINCHESTER, MASS.

YESTERDAY AND TODAY

WE'VE BEEN MAKING

GRAY PAY STATIONS

SINCE 1891



— and from the day Gray installed the first Pay Telephone in Hartford, the search toward perfection has never ceased. Just as today's Pay Station bears little resemblance to the early model, so do we expect tomorrow's improvements to make obsolete the machine of today. Gray looks to tomorrow with confidence and points to the new Gray Audograph, shown here, as one reason for that confidence. It incorporates the most advanced electronic principles.

Authorized Agents: Kellogg Switchboard & Supply Company • Graybar Electric Company • Stromberg-Carlson • Automatic Electric Sales Corporation • The North Electric Mfg. Company • Leich Sales Corporation Northern Electric Company, Ltd. • Automatic Electric (Canada), Ltd.

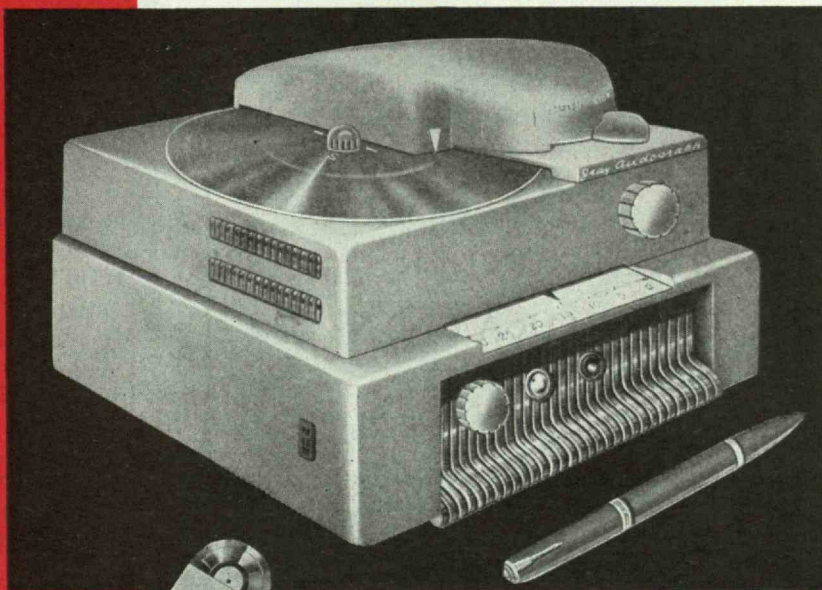
... AND TOMORROW

WE'LL BE MAKING THOUSANDS OF

GRAY AUDIOGRAPHS

No other recording machine has all the features of the Gray Audograph — that's why it's worth waiting to see . . . and buy!

- so rugged and stable it operates in any position . . . even upside down or on its side!
- handsome, compact (the fountain pen gives you an idea of its size). Weight about 12 pounds — dimensions 9½x9½x6½.
- easy to use — record or listen by the flick of a lever.
- instantaneous start-stop, back-space, visible correction marker, and lapsed time indicator.
- built-in speaker and jack for earphones or "soft" speaker.
- turn the knob at right to put any groove of the record under the stylus.



The Audograph uses paper-thin Flexograph discs in three sizes:

5¾"—10 minutes recording time on each side
6¾"—16 minutes recording time on each side
8½"—31 minutes recording time on each side

THE GRAY MANUFACTURING COMPANY

W. E. DITMARS PRESIDENT
(CLASS OF '23)

16 ARBOR STREET HARTFORD 6, CONN.

230 PARK AVE. NEW YORK 17, N. Y.

ACCURACY

Demands these Tools—

Production is assisted and maintained, in rate and quality, by precision tools. With Brown & Sharpe Tools to define measurements, the maintenance of accuracy required in manufactured goods is simplified—manufacturing costs kept within minimum limits.

B.S.

STYLES AND SIZES
FOR MOST
REQUIREMENTS
MICROMETER TOOLS
RULES
COMBINATION SETS
PROTRACTORS
SQUARES
VERNIER TOOLS
GAGES
INDICATORS
TOOLMAKERS' TOOLS
CALIPERS and
DIVIDERS

BROWN & SHARPE MFG. CO.
Providence 1, R.I., U.S.A.

BROWN & SHARPE TOOLS

**BATH
IRON WORKS
CORPORATION**

*Shipbuilders and
Engineers*

BATH, MAINE

THE TABULAR VIEW

Science.—Not often does The Review have the privilege of publishing as thoughtful a document as the Alumni Day symposium address of Vannevar Bush, '16, Vice-president of the Institute from 1932 to 1938, and now President of the Carnegie Institution of Washington and Director of the Office of Scientific Research and Development. Few others are as well qualified, by experience and ability, to discuss the important role which science is destined to play in our daily lives as is Dr. Bush, who (page 553) calls upon scientists and engineers to take a more active part, as professional men, in ministering to man's welfare. Those readers of The Review who may need an introduction to Dr. Bush—if any—will find, on page 568, the masterly treatment by which George R. Harrison, Dean of Science, worked his way out of a recent trilemma.

Food.—Prerequisite to an early peace is the problem of supplying the peoples of all nations with foodstuffs sufficient to meet their needs. Any such short-range program must be supplemented by a long-range program in which our technical knowledge of food production is shared with other nations, in the opinion of Henry A. White, President of the Hawaiian Pineapple Company. His Alumni Day address (page 557) outlines some of the many ways in which science and technology have increased food production and conserved much needed moisture and top soil through the use of new methods of fertilization, growth hormones, and contour farming.

Internationalist.—Norman J. Padelford, Professor of International Relations at the Institute, directs attention (page 561) to problems of international relations in a scientific era. He has served on the staffs of Harvard, Radcliffe, and Colgate, and immediately prior to joining the M.I.T. faculty, was Professor of International Law at the Fletcher School of Law and Diplomacy. During World War II, Professor Padelford served as member of United States Delegation, London Council of Foreign Ministers, as member of this country's delegation to Dumbarton Oaks, and as Executive Officer of the United Nations Conference at San Francisco.

Freedom.—Banquet address, on Alumni Day, was given by Paul W. Litchfield, '96, Chairman of the Board of the Goodyear Tire and Rubber Company. "Looking Ahead After 50 Years" (page 565) is certainly an appropriate title for an address by a member of the 50-year class. But while he looks forward, Mr. Litchfield also reminds us that we may learn well from the past. Today freedom and enterprise are as important to the development of the individual—and the nation—as when they were taught to him as a student at M.I.T.

Briefs.—Returning from a recent tour of Germany, Roscoe H. Smith, '23, provides an account (page 550) of efforts to restore German transportation and manufacturing. W. M. Breazeale, now Associate Professor of Electrical Engineering, at the University of Virginia, records (page 551) one phase of radar work which went on at the Radiation Laboratory during the war.

BETTER SURE THAN SORRY

According to olden legend Icarus flew too near the sun, only to spin in when his wings failed to stand the stress at high temperature. Here was an early case of serious trouble due to misplaced confidence in materials.

There are many applications for steel nowadays where creep strength (the ability of steel to keep working when the heat is on) makes a

tremendous difference. Molybdenum steels, being noted for their creep strength, are economical preventives of high temperature trouble.

Icarus had no accurate data on materials to guide him. A wealth of tested, practical facts about Molybdenum steels for elevated temperature service is available on request for today's engineers and designers.



MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"
CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

Climax Molybdenum Company
500 Fifth Avenue • New York City

A MONUMENT TO NEGLECT

Fire Destroys Property

When property is destroyed by Fire, the community and everyone in it loses — Yet the community may protect itself against loss of wealth — and income — by keeping the fire losses low. There will always be fires — the problem is to extinguish them while they are small.



YOU Can Help

By urging your city government to provide adequate fire alarm box distribution. Prompt alarms reduce the fire loss and protect income.

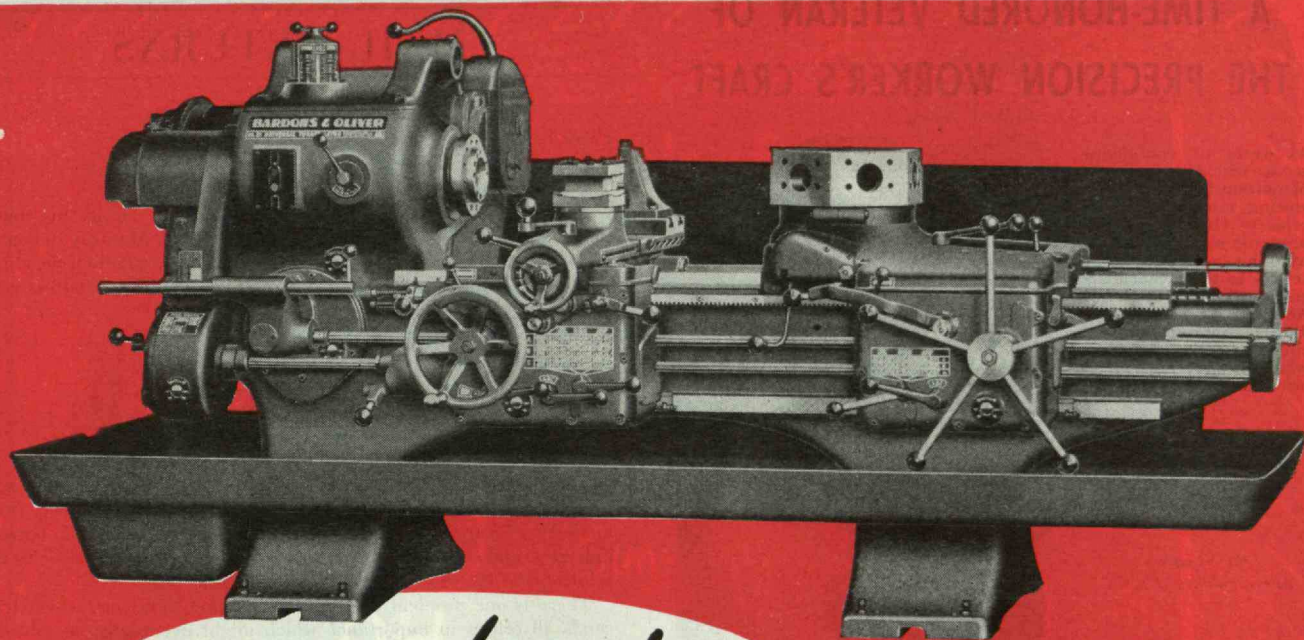
F. B. Philbrick '18, President and Gen. Mgr.

E. J. McCarthy '20, General Sales Mgr.

THE GAMEWELL COMPANY

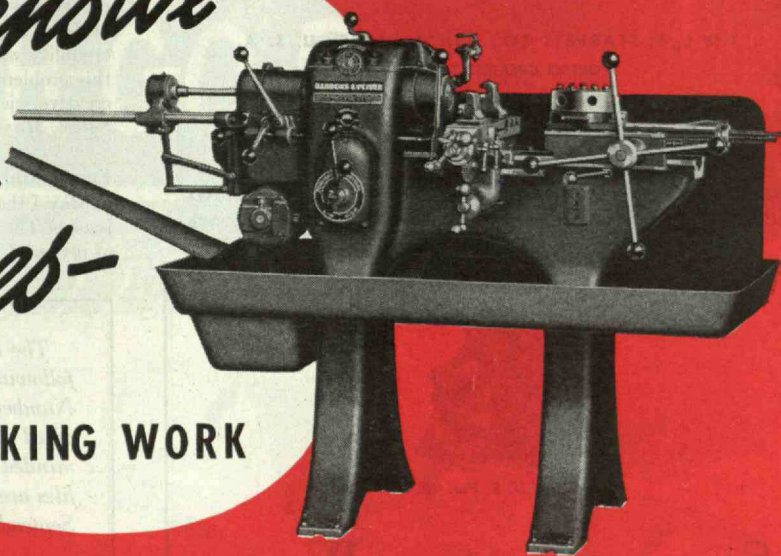
NEWTON UPPER FALLS 64, MASSACHUSETTS

IN CANADA: NORTHERN ELECTRIC COMPANY, LTD., MONTREAL



A Comprehensive Line of Turret Lathes—

FOR BAR AND CHUCKING WORK



The range of the Bardons & Oliver line of turret lathes covers bar work from 1/8 inch diameter or smaller to forgings or castings up to 15 inches. Each size in the line is outstanding in its own field for fast production and high quality work. In this era of keen competition

and high wage standards Bardons & Oliver Turret Lathes will lower production cost and raise profit margin.

We suggest you submit your production problems and blue prints of your turret lathe work to our tool engineers for study and recommendation.

BARDONS & OLIVER, Inc.

1133 WEST 9TH STREET • CLEVELAND 13, OHIO

A TIME-HONORED VETERAN OF THE PRECISION WORKER'S CRAFT

41 years of continuous service with Allis-Chalmers Manufacturing Co. are convincing testimony to the value of Olaf Olson as a precision worker and master of his craft. 66 years of service to the manufacturers and skilled workers of America have made Starrett Tools the outstanding choice of buyers and users wherever precision measuring tools are used.

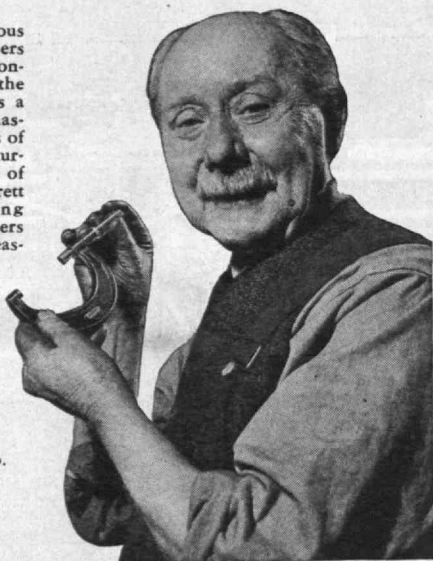


Photo courtesy
Allis-Chalmers Mfg. Co.

THE L. S. STARRETT CO., ATHOL, MASS., U. S. A.
WORLD'S GREATEST TOOLMAKERS

STARRETT

PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • HACKSAWS
METAL AND WOOD CUTTING BAND SAWS • GROUND FLAT STOCK



Reg. U. S. Pat. Off.

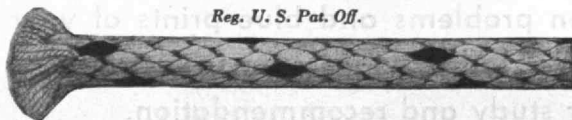
Samson Cordage Works

Boston 10, Mass.

Manufacturers of braided cords of all kinds, including sash cord, clothes line, trolley cord, signal cord, shade cord, Venetian blind cord, awning line, etc., also polished cotton twines and specialties.

SPOT CORD

Reg. U. S. Pat. Off.



Our extra quality sash cord, distinguished at a glance by our trade-mark, the colored spots. Especially well known as the most durable material for hanging windows, for which use it has been specified by architects for more than half a century.

MAIL RETURNS

Grass In Other Pastures

FROM F. L. CAMPBELL:

I have been intending for some time to tell you that I greatly admire *The Technology Review*.

It seems to me that your magazine is the only one in this country that might be called a competitor of the *Scientific Monthly* in content. I must admit that, from an artistic point of view, you do a very much better job than we do. Don't be surprised if I should try to dress up the *Monthly* to improve its attractiveness.

Editor, *Scientific Monthly*
Washington, D. C.

Intelligence Level

FROM JOHN J. BROPHY:

I read with great interest the article by Professor Bitter, "The Scientist's Social Responsibility," and I was especially impressed with his suggestions for the practical application of mathematics to social problems. Some of the problems which he enumerated are truly fundamental to future progress along social-economic lines as he correctly indicates, and certainly the collection of adequate data is basic to their solution and therefore justified in every sense.

There is one problem confronting mankind, however, which transcends all others in importance which might eventually be solved by man, using the "scientific method," unless we are forever to regard it as a process of evolution and insoluble by man. This is the problem of raising the intelligence level of a sufficient portion of the human race to at least a point or degree where mass stupidity and consequently credulity will not continue to prevail to generate chaos. The answer to this problem, even in the next century, is worthy of the best efforts of creative science now.

Salem, Mass.

Compliment Enjoyed

FROM SHIRLEY M. HALL:

May I thank you for your kindness in sending me copies of the May issue of *The Technology Review* on the cover of which is a reproduction of my print Harbor Peace.

(Concluded on page 592)

The Review is not published during the summer months following July. This issue, therefore, concludes Volume 48. Number 1 of Volume 49 will be published on October 27 and dated November. Readers who bind their copies are reminded that if they possess nine issues of Volume 48, their files are complete. An index to the volume will be ready on September 30 and will be supplied post free upon request.

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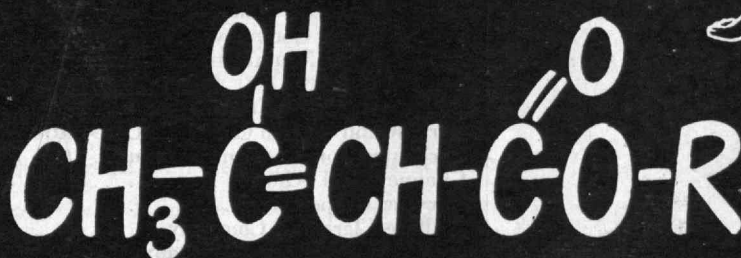
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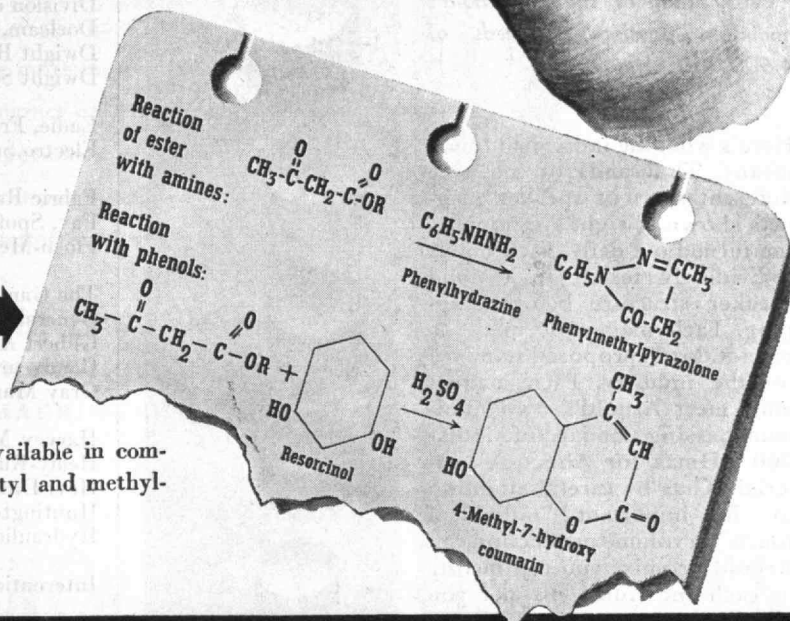
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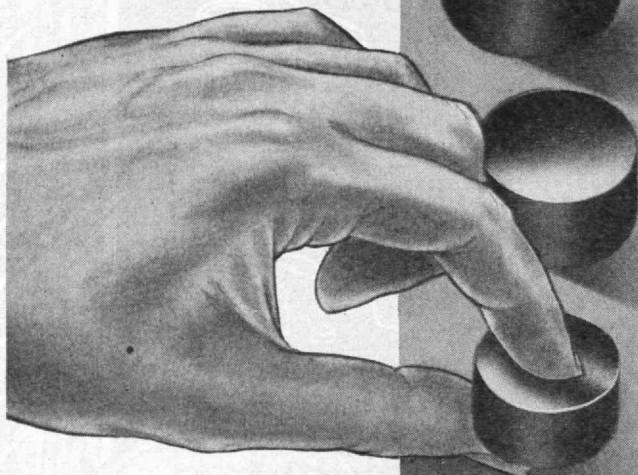
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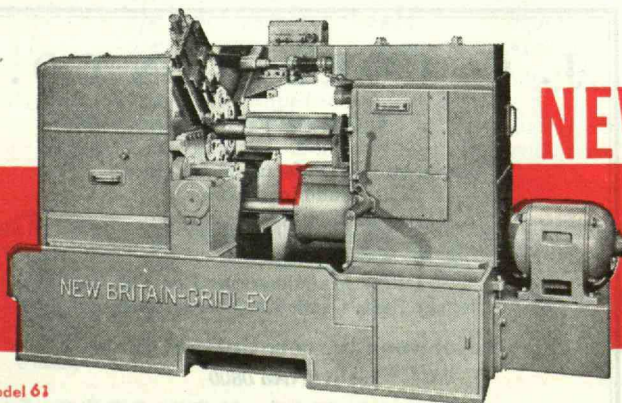
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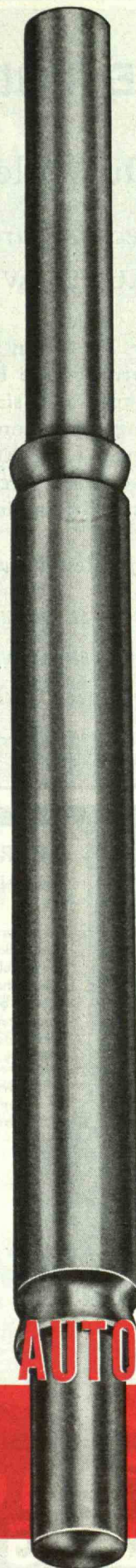
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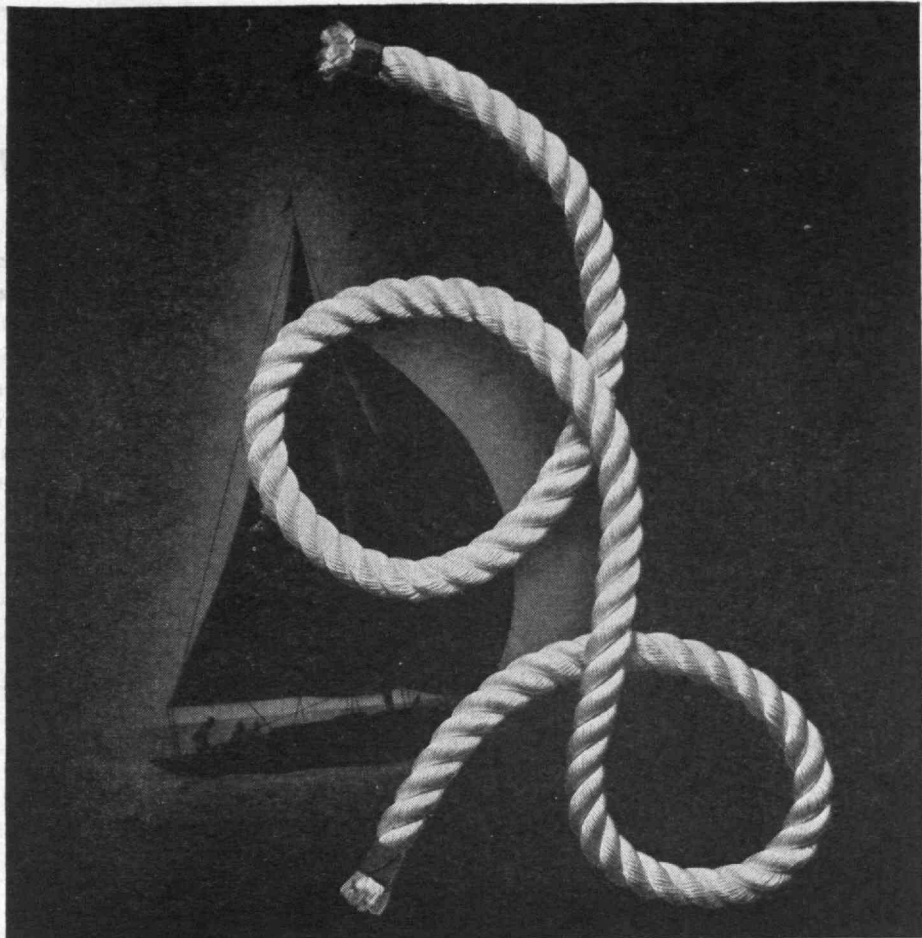
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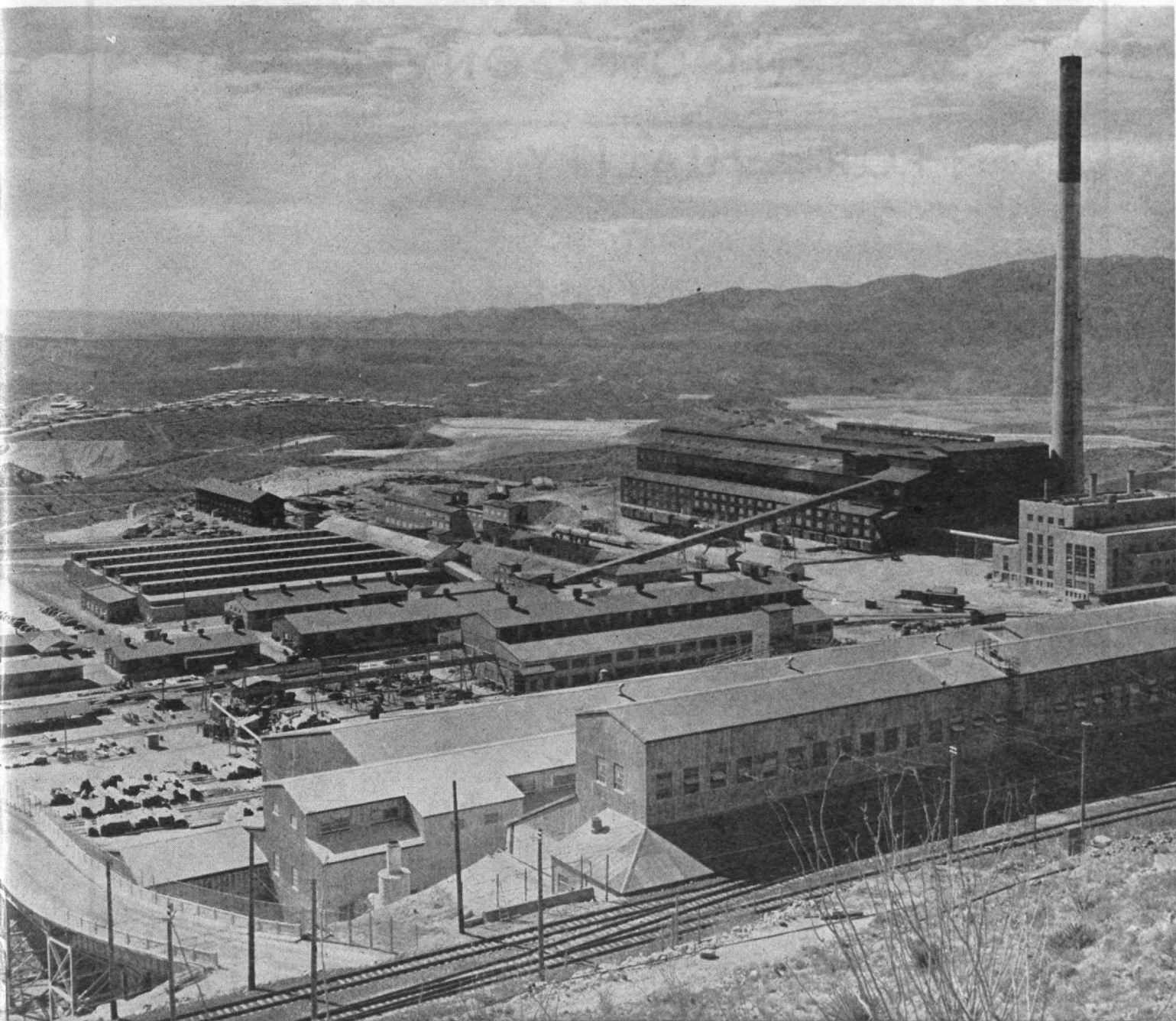
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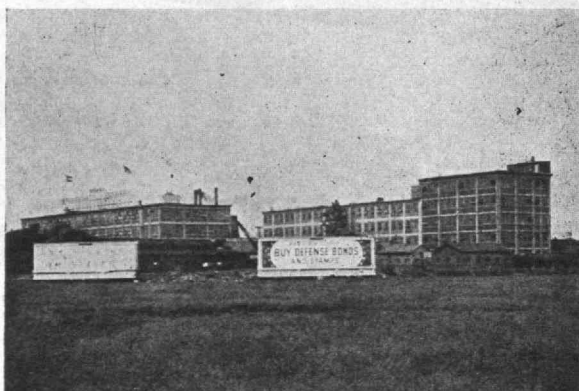
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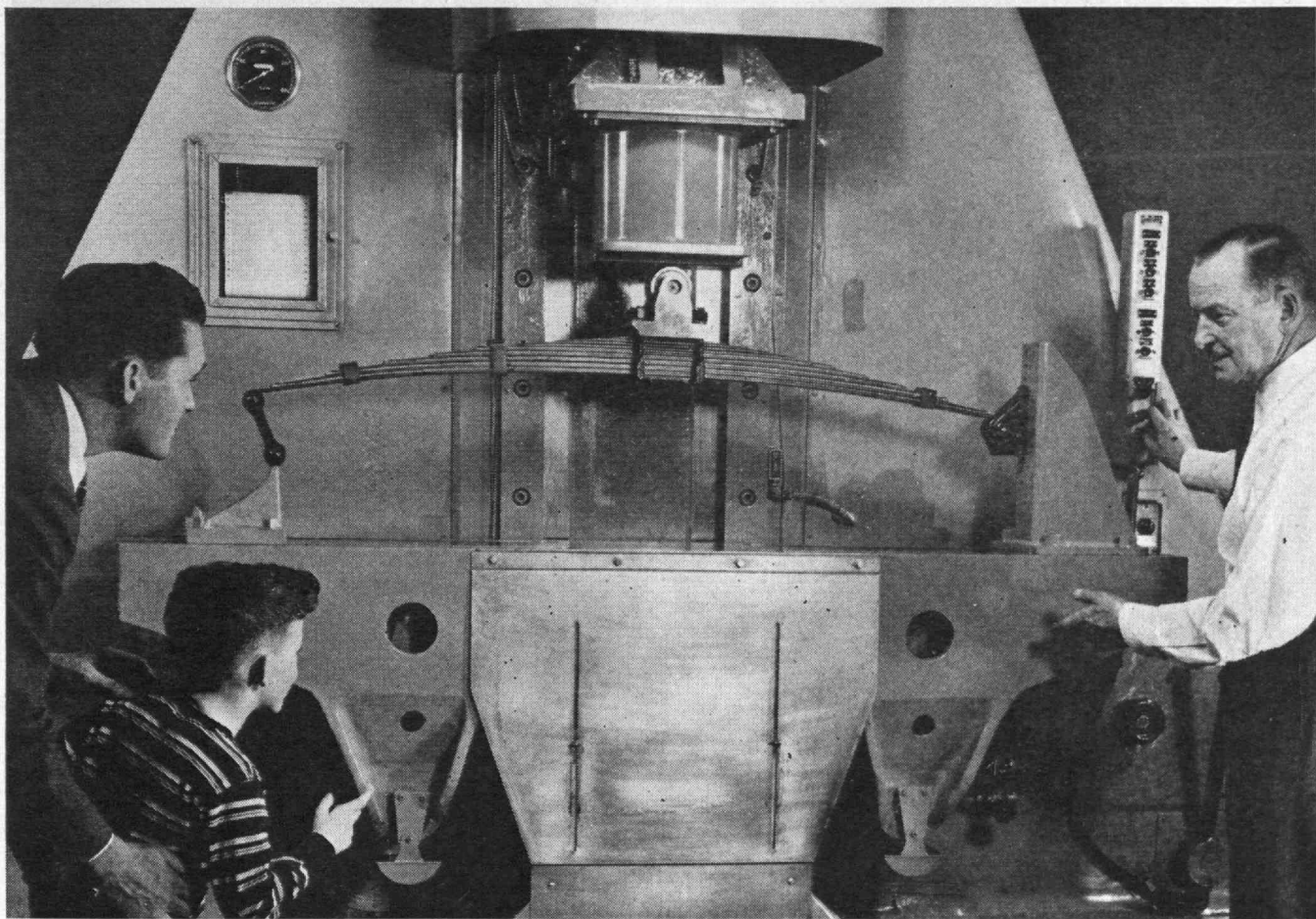
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EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY



Stanley Witt

Trees in Mexico

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Photo by William M. Rittase

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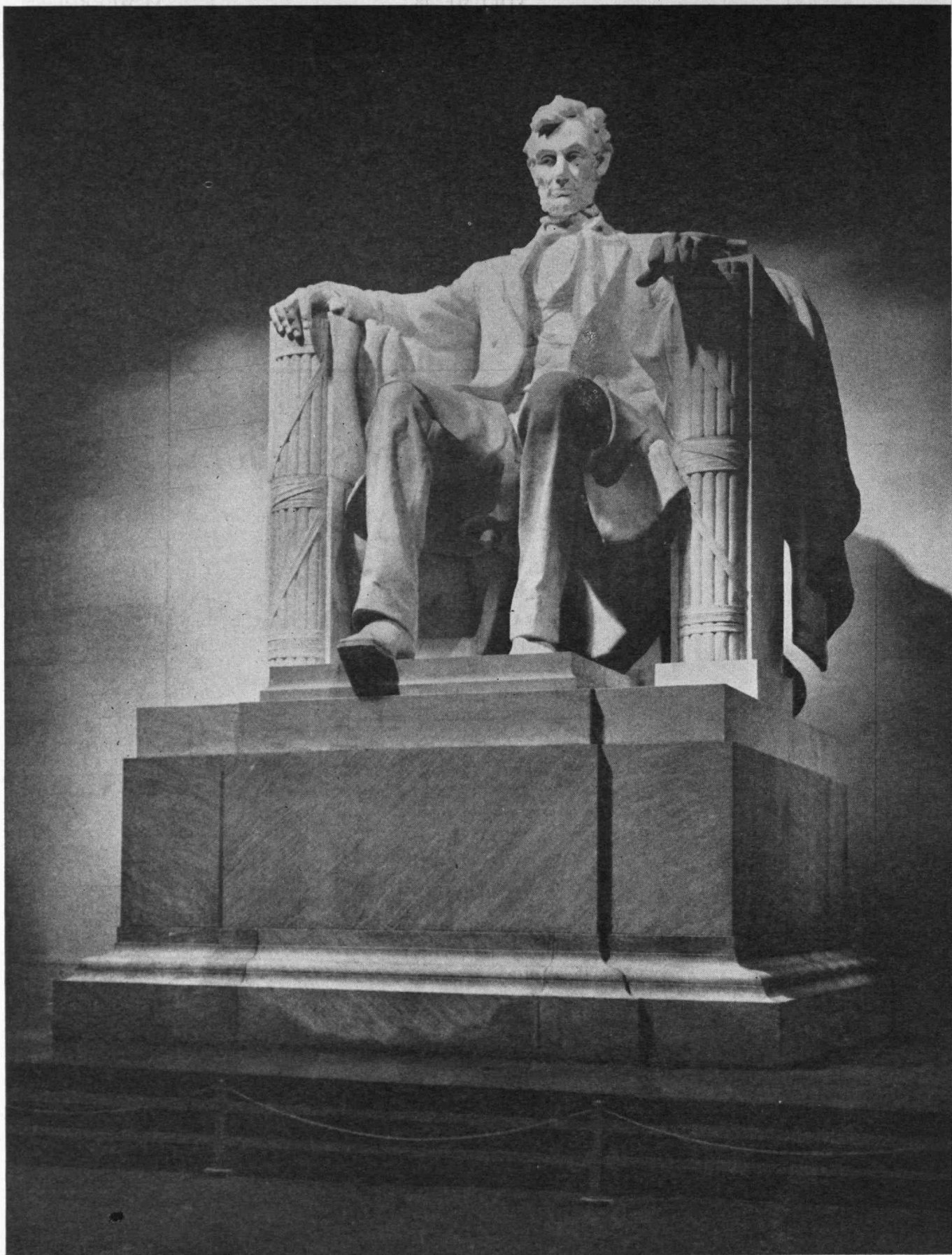
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Statue in Lincoln Memorial, by D. C. French, '71

Ewing Galloway, N. Y.

With malice toward none; with charity for all; with firmness in the right, as God gives us to see the right, let us strive on to finish the work we are in; to bind up the nation's wounds; to care for him who shall have borne the battle, and for his widow and his orphan—to do all which may achieve and cherish a just and lasting peace among ourselves and with all nations.

Lincoln's Second Inaugural Address.

THE TECHNOLOGY REVIEW

Vol. 48, No. 9



July, 1946

The Trend of Affairs

Wartime Waste

HARDLY any activity during the war directly involved a greater proportion of the civilian population than the various government-sponsored scrap drives. This was true not only for the United States but even more so for the other major belligerents, most of them far from affluent in raw materials. The iron fence around Buckingham Palace was cut down with much ceremony. Iron manhole covers disappeared from the streets of Japan, to be replaced with wood or concrete. Government-sponsored collections began in Germany in 1936, under the gentle guidance of storm troopers, and, as needs grew more desperate, copper roofs, church bells, and many issues of coins were collected or confiscated.

In this country, always comparatively well supplied with most essential industrial metals, collections got into full swing only after we were already at war. The War Production Board estimated that the activities of its salvage division had aided in the gathering of about 6,000,000 tons of scrap a year which might not otherwise have been available to industry. Some of the metal came from unexpected sources. The Hotel Ansonia in New York contributed the metal ornaments on its roof, which few could see anyway; also several tin beer coils from its bar.

The basic reason that drove the governments to enlist large segments of the population in the scrap drives, most of them untrained in the rather elaborate requirements of the scrap industry, is that labor is the biggest single item in the cost of scrap. Left to economic law, scrap will not be gathered once it becomes too diffusely spread or too difficult to be separated into components which industry can use.

Although it may be an exaggeration to say that the "collection drives held in various parts of the country had little success," they sometimes produced unexpected results. Officials in charge frequently found themselves with large, unsightly piles of pots, baby carriages, old

bath tubs, and similar items which processing industries, although badly in need of metal, were coy about accepting. Aluminum kitchen utensils, turned in by housewives under the impression that they would be melted immediately into fighter planes, were so contaminated with iron and other undesirable materials that much of them could be used for little else than the prosaic but useful job of "killing" or scavenging molten steel. In England the collection and segregation of domestic scrap by local authorities was relaxed after 1943 and the job turned over to firms with the equipment and knowledge required to process scrap into grades suitable to the exacting requirements of industry.

Nevertheless, the heavy and, in some cases, dangerous inroads which war demands made on our reserves of raw materials might have been far worse were it not for the availability of enormous tonnages of secondary materials. The iron content of the scrap used by this country's steel mills in 1943, for example, substantially exceeded the iron content of all the ores, domestic and foreign, that went into the furnaces. That was the average. For steel mills in the New England area, scrap supplied 69 per cent of the iron used; in the Pacific area, 87 per cent; and the few plants in the Southwest ran almost 100 per cent on scrap. Contributions to the manufacture of nonferrous metals were not quite on the same proportionate scale, nor did scrap, as it sometimes does in peacetime, supply more metal to the furnaces than do the mines. But of the scrap metals used in 1943 there were more than 1,000,000 tons of copper, 368,000 tons of zinc, and 341,243 tons of lead.

Battlefield scrap turned out to be of minor importance, in spite of the tremendous quantities potentially available. A recent dispatch from Bengasi, Libya, describes that area as a "great boneyard" littered with the skeletons of hundreds of planes, tanks, water cans, and the other paraphernalia of modern armies. Sixty-seven wrecked ships lie in the harbor. But the absence of trained labor, processing facilities, and near-by markets, as well

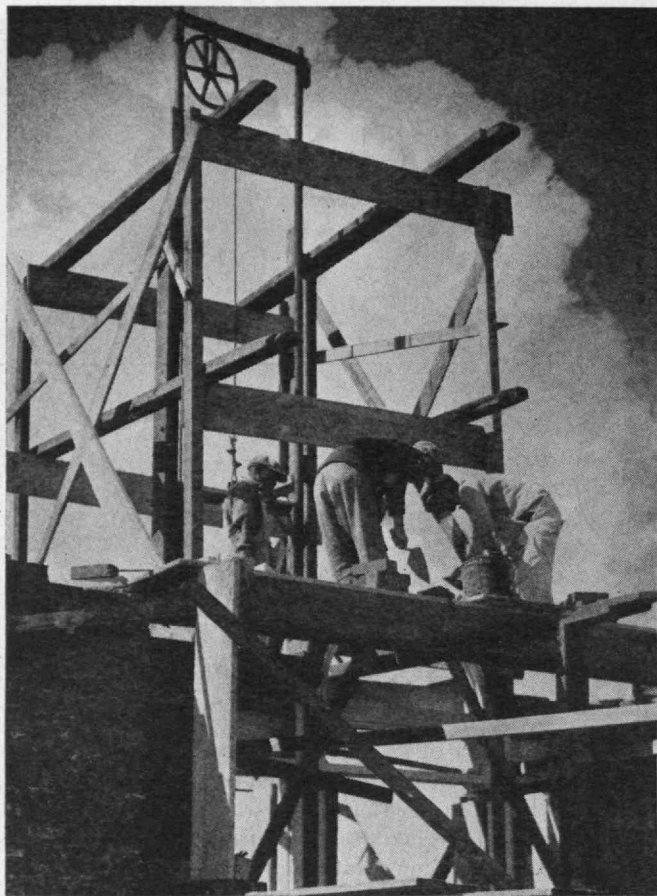


Photo by William M. Rittase

as the relative inaccessibility of much of the scrap may make it unattractive to gather this material for an indefinite period. The Army's present policy, in fact, is to return iron and steel scrap only as ballast, except from Japan and Germany, where the amount gathered will depend on labor conditions. More effort will be made to return nonferrous scrap, particularly lead- and tin-bearing materials, but copper-bearing scrap gathered in Allied countries will be sold locally to aid in rehabilitation.

Quite aside from difficulties in getting it, some battlefield scrap presents unusual difficulties to the wrecker. During the first part of 1943, for example, wrecked foreign and American planes were brought into this country in fairly large numbers. Attracted by the possibility of buying aluminum planes at a fraction of a cent a pound and selling aluminum scrap at five or six cents a pound, some dealers bought these planes freely. Explosions from ammunition, gas tank vapors, and hydraulic system fluids became so frequent, however, that the War Production Board soon put restrictions on the further sale of such planes, and importation was stopped entirely early in 1944. The fact that the metals in these planes were heavily and expensively alloyed to get the utmost in physical properties was no asset to the scrap metal dealers, for some alloying materials, such as chromium, tend to be lost during remelting, and the others can be worse than useless.

The record-breaking amounts of scrap that helped to keep American metallurgical industries going came mostly from what is called industrial scrap — the turnings, clippings, and other leavings resulting from the production of new equipment. As industrial production rises, so does the quantity of such scrap. War accentuates this trend, for

military equipment, designed in general for more severe service and with less emphasis on economics, produces proportionally more scrap than civilian goods. Four times as much "new" copper scrap, to quote a somewhat extreme case, was produced in 1943 as in 1939. Nevertheless, although most of the iron, aluminum, and copper scrap used during the war was of the new or industrial category, most of the lead, tin, and antimony was old scrap, from obsolete equipment and similar sources.

Motors to Restore German Industry

By ROSCOE H. SMITH

WITHOUT question, German industry has received a staggering blow as the result of the war. Germany is turned upside down, and her industry, completely disorganized, is struggling to operate sufficiently to support at least the civilian needs which the military occupation governments are trying to meet. Today, amid scenes of great destruction, life and business in Germany are being reorganized to a strange and uncertain future.

Labor is ample. Many operations have for years been done by women who are not only available but anxious to work. One important reason for such willing industriousness is that food rations are graded by useful occupation as well as by personal need. Therefore, one who is lazy is likely to feel the pangs of hunger more quickly than is his industrious neighbor.

Cities which were spared destruction are few and far between — an example is Heidelberg — but there are a considerable number of manufacturing plants which have survived the war with little more than a single bomb hit, if they have been damaged at all. Machine tools have come through the bombings surprisingly well. In fact, unless hit directly, machinery in general does not appear to have been harmed beyond reasonably easy repair.

The same cannot be said, however, of the electric motor industry, which bears a large burden in the industrial rebuilding of Germany. Many of the electric motor plants are severely damaged. In some plants temporary repairs to buildings have made it possible to resume operations with outputs limited to about 20 to 25 per cent of normal.

To the extent that an electric motor manufacturer can do any work at all, the military government is sending to it hundreds of motors to be rewound, reconditioned, or even completely rebuilt. Motors for street railways, electric locomotives, sanitation plants, refrigeration plants, and similar public needs and services are among those for which repair or replacement is most urgently needed. The limitations on motor manufacturing on the Continent today are principally three in number: (1) the difficulty encountered in securing and transporting materials such as copper wire, steel sheet, shaft steel, castings, and insulation; (2) the lack of fuel; and (3) the reduction in supervisory personnel.

In Germany, the size and weight of a motor reflect the general practice of trying to make a little go a long way. Even before the war, sheer necessity forced Germany to build motors with a very small available reserve for overload. The Germans cannot get any more out of a pound of copper or iron than can we in the United States. But comparatively low labor costs and high material costs in Germany have resulted in emphasis being placed on the saving of material rather than on the saving of labor. The

situation is quite the reverse in the United States, and hence manufacturing practices reflect the different economic conditions.

Investigations of electrical designs in both alternating current and direct current motors indicate that, for active materials used, the results are as would be expected from American practice. In Germany, the sizes and weights of motors also reflect the general practice of allowing higher temperature rise in operation. Ribbed surfaces to increase heat dissipation are used more generally than in the United States, and large diameter fans on rotors and armatures are common.

The Germans had a lot of aluminum and used it instead of copper for the stator winding of squirrel cage motors. Some motors were also built using aluminum for commutators. The aluminum commutators were not considered satisfactory because of the rapidity with which they roughen from arcing. Better results were obtained with soft iron commutators with thin sheets of copper between the iron and the insulation. Engineers who had worked on this development believed that material from the copper sheets was deposited on the iron segments and that this copper deposit protected the commutator surface from rust. The commutators were far inferior to copper commutators, however. In one case, carbon had been tried as a substitute for copper in commutator bars, but although the carbon commutators were successful electrically, they were mechanically weak.

The use of glass fabric insulation, instead of mica, was developed and adopted by one company. On an experimental, and therefore relatively small, scale, another company had gone into the development of synthetic mica made of quartz.

Whether Germany is to rise again as an industrial nation will not be settled for some time to come, in all likelihood. Meanwhile, the German electric motor industry has its hands full in simply rehabilitating equipment damaged or virtually destroyed as a result of the concentrated bombings delivered by the Allied air fleet in the closing months of the war. It will be some time before the motor manufacturers can take care of the repair work now on the docket, even though they may be capable of working at nearly normal efficiency. Meanwhile, American motor manufacturers appear to have made so much more progress in the use of new materials and better application of old ones that, with rare exceptions, there is very little to be adopted from even the best of the German practice.

Noise in Microwave Receivers

By W. M. BREAZEALE

ONE phase of the Radiation Laboratory work, as mentioned by Dr. du Bridge and Dr. Ridenour in their article "Expanded Horizons," published in *The Review* for November, 1945, was the development of microwave radar receivers with the best possible sensitivity. The absence of atmospheric static at microwave frequencies makes it possible to utilize any degree of sensitivity which can be obtained. An investigation of the factors affecting the operating range of radar equipment over line-of-sight paths discloses that this range is directly proportional to the fourth root of the transmitted power and also to the fourth root of the power sensitivity. Decreasing the noise level of a radar set to half its previous

value may not be as sensational as increasing the transmitted power from 1,000 kilowatts to 2,000 kilowatts, but the increase in range is just as great; hence, the large amount of work done in improving receiver performance.

The sensitivity of a microwave radar receiver is determined by the noise level in the early stages. The theoretical lower limit is set by the thermal-agitation-noise — noise arising from thermal agitation of electrons which are free to move in conductors — in the input of the receiver. The electrical power produced by noise and available at the input of the receiver is about 5×10^{-15} watt for a typical radar set. The sensitivity or "noise figure" of the receiver can be expressed as the ratio of the signal power to noise power input required to give an output signal equal to the noise. Obviously the poorer the sensitivity the larger the noise figure. Noise figures of microwave receivers may be as low as four or five.

Early in the war it became evident that means must be found to measure the sensitivity of microwave receivers in the laboratory. Such sensitivity measurements involved the determination of signal power levels in the neighborhood of 10^{-13} watt. Absolute power measurements are difficult to make at levels less than one microwatt. Therefore, it became necessary to produce signals at power levels that could be measured accurately and then to reduce the power level to the desired value by means of an attenuator. An accurate microwave attenuator with a power range of 10^8 was necessary to reduce the signal below the micro-microwatt level.

A suitable device for this purpose at microwave frequencies could not be constructed using apparatus and methods which would be satisfactory at broadcast or

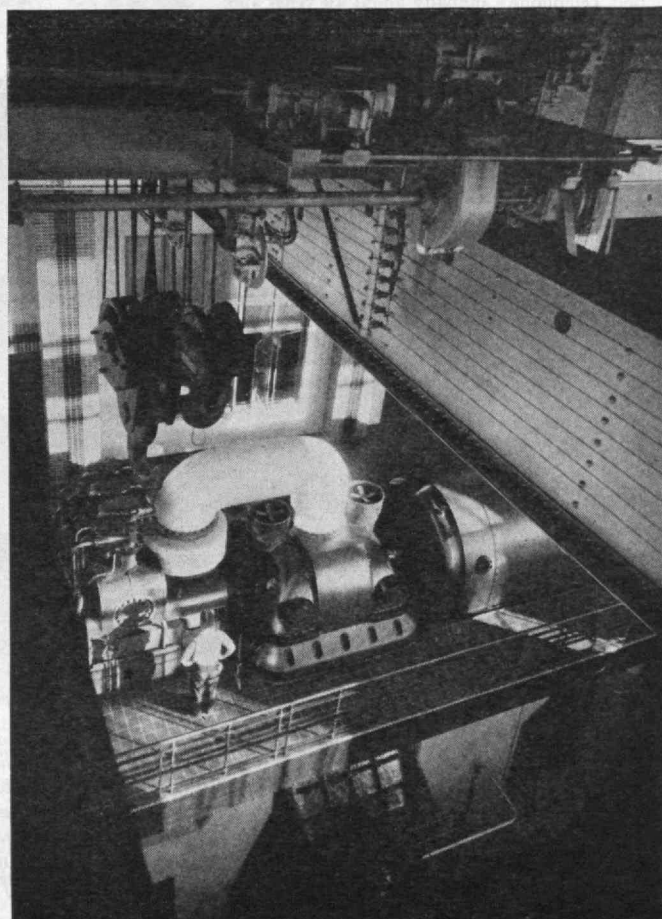


Photo by William M. Rittase

other lower frequencies. Waveguides* — hollow metallic ducts through which microwaves could be "piped" if the cross sectional dimensions of the guides were greater than a half wavelength — lent themselves to this need. It was simply necessary to use waveguides under conditions for which the microwaves could not be efficiently transmitted — *i.e.*, for frequencies less than "cut-off."

Fortunately, the theory of waveguides had been worked out to the point where the attenuation of an electromagnetic wave at frequencies less than cut-off could be accurately calculated from a knowledge of the diameter and length of the guide. The attenuation is very high in this region, and a waveguide operated under these conditions proved to be a satisfactory microwave attenuator.

At present there are no vacuum tubes which will amplify satisfactorily at microwave frequencies. As a result, microwave radar receivers use a superheterodyne circuit with the initial stage acting as a frequency converter to reduce incoming signals to frequencies which can be successfully magnified. Because it produces less noise than a vacuum tube, a crystal is generally used as the frequency converter. An analysis of the operation of such a converter shows that crystals are very quiet but that their conversion gain is less than unity — *i.e.*, the output voltage is less than the input voltage. On first glance it might seem that a noisy crystal with a small conversion loss would be as good as a quiet crystal with a large conversion loss. Further analysis shows however, that when the conversion efficiency is small, noise in the circuit following the crystal contributes appreciably to the overall receiver noise. Thus, noise in the amplifier following

* Independently developed by W. L. Barrow, '29, and his associates at the Institute and by George C. Southworth and his associates in the Bell Telephone Company about 10 years ago.

the crystal will have a greater effect on noise in the receiver when the high loss crystal is used.

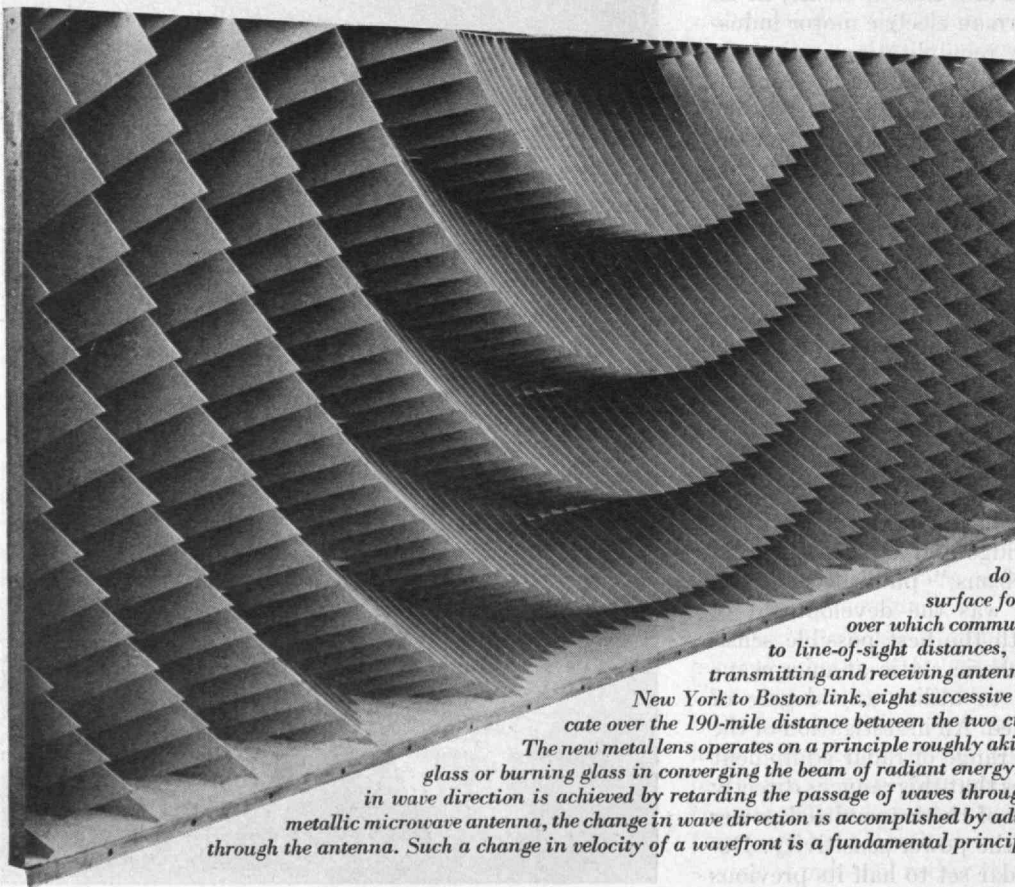
These and other considerations pointed out the desirability of making separate determinations of the crystal's noisiness and conversion loss. Tests were evolved for making these measurements, and these replaced the simple noise figure determination described earlier. In essence, the first quantity is measured by comparing the noise output of the crystal excited by the local oscillator with the thermal-agitation-noise of a resistor, and the second by input and output power measurements. Happily it turns out that the latter can be made at a comparatively high level. Today these tests are part of the routine of crystal production.

The significant part of this study is simply that it made possible considerable reductions in the noise of microwave receivers and in so doing brought back into circulation the crystal detectors of the early days of radio broadcasting. The importance of noise reduction is recognized when it is realized that noise reduction was the most important single factor which made possible radar contact with the moon last January.

Illegitimate Yeasts

IN human society illegitimacy is often, if unjustly considered to be a stigma; but among the yeasts, most valuable of the microbes that serve man, illegitimacy is an asset. To grasp the significance of legitimacy in the reproductive processes of yeasts, we must consider briefly recent discoveries in yeast genetics.

Yeasts reproduce mainly by a simple asexual process called "budding," whereby daughter cells appear as protuberances on the periphery (*Continued on page 582*)

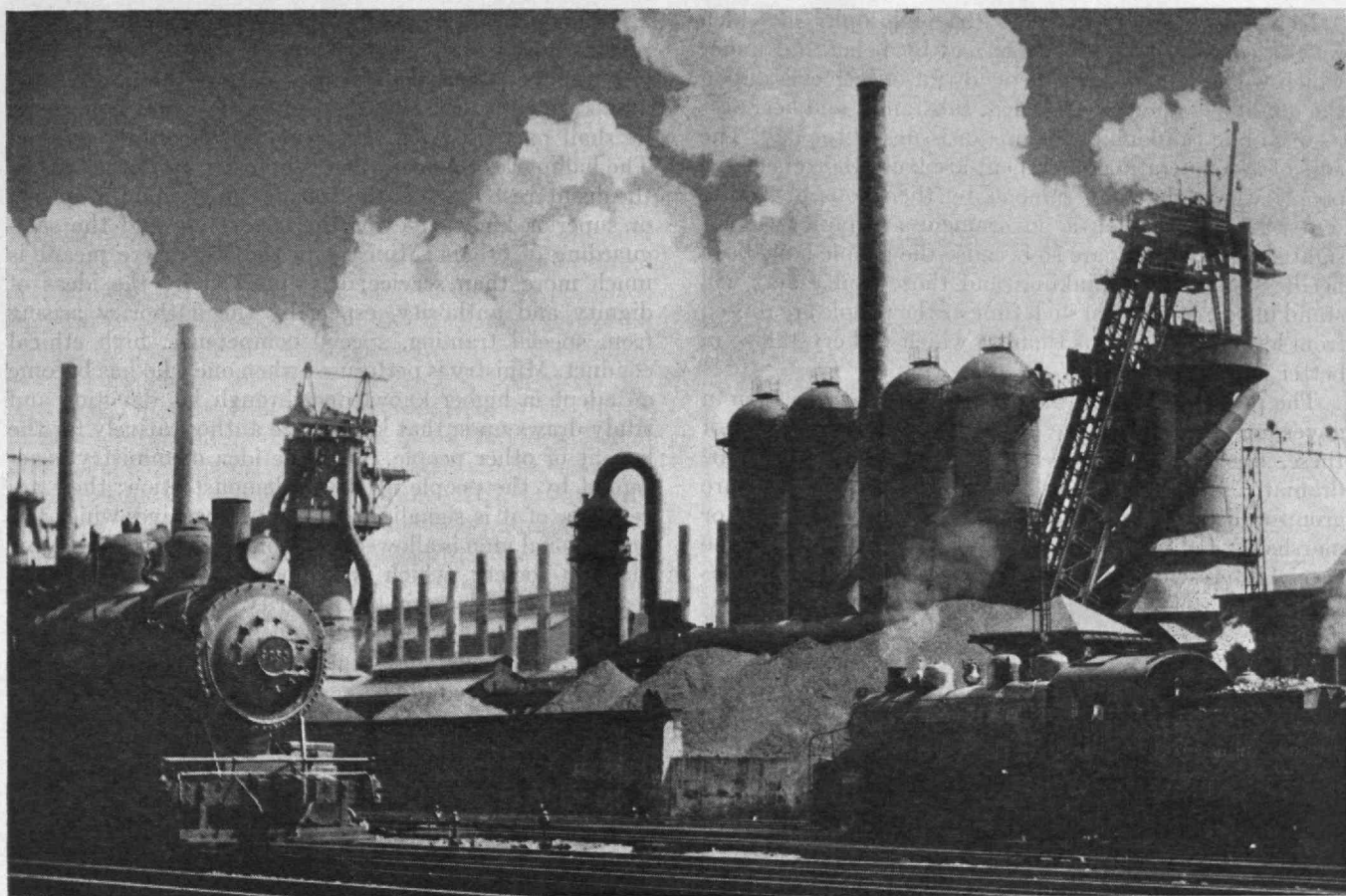


Futuristic motif characterizes this view of half of a newly designed directive antenna for focusing ultrahigh-frequency radio waves in a manner similar to the collimation of light beams by means of Fresnel lenses. This unusual type of radio antenna, developed by the Bell Telephone Laboratories, inaugurates a new era in the design and construction of microwave radiating systems. Most immediate use for the new lens-type antenna is its application to microwave radio relay systems such as that now under construction between New York and Boston. In radio communication, microwaves behave much like optical waves. Unlike longer radio waves, microwaves

do not follow the contour of the earth's surface for any appreciable distance. The range over which communication is effective is therefore limited to line-of-sight distances, which depend on the elevation of the transmitting and receiving antennas but is of the order of 30 miles. In the

New York to Boston link, eight successive relay stations will be used to communicate over the 190-mile distance between the two cities.

The new metal lens operates on a principle roughly akin to that of a simple convex magnifying glass or burning glass in converging the beam of radiant energy. In the case of a glass lens, the change in wave direction is achieved by retarding the passage of waves through the glass, whereas in the case of the metallic microwave antenna, the change in wave direction is accomplished by advancing the wavefront as the waves pass through the antenna. Such a change in velocity of a wavefront is a fundamental principle of all lenses.



William M. Rittase

Science, Strength, and Stability

In Coming of Age as a Profession, Science Imposes New Duties on Scientists and Engineers in the Problem of Attaining National Harmony and International Peace

BY VANNEVAR BUSH

THE international peace which is demanded by thoughtful men the world around is not the mere absence of war. It is something far more positive than that — it is a condition of amity and cordial collaboration among independent national groups, each confident in its own vigor, within an international framework. It is thus dynamic, not static; progressive, not stagnant; pioneering in all fields where general betterment of man's spiritual and material life may be expected. We have not had it for many a long year. We do not have it now. Yet peace must be secured if the human race is to continue. We have faith that it can and will be assured.

But faith without work is not enough. For the boon of this peace to be attained, and for the heart-rending scourges of destruction, disease, famine, and despair to be lifted throughout the world, there is work, much and great work, to be done. It is only as all sorts and conditions of men do their share unselfishly that there can be created in each of the peoples of the world the self-confident vigor which is the essential precursor of unstinted world collaboration. Whatever the ultimate world

system toward which we are tending, whatever there may be surrendered of individual sovereignty by the nations in the interest of that system, its strength and stability will have to be drawn from the several states composing it. Recognizing this imperative condition, we recognize that the first task laid on every group in our wonderfully varied population is to give, seriously and consciously, its best effort to the creation — and the enhancement — of strength and stability in the United States.

We are concerned here today with the general subject of technology and international peace. What is technology? As contemplated here, it cannot be regarded in isolation. It cannot be considered apart from the science out of which it grows and the engineering through which it is usefully expressed. We must deal with all three of these concepts — basic research, applied research, engineering. Let us then for convenience speak primarily of science, the general area in which all three concepts operate. How then, may scientists aid in the establishment and growth of the national strength and stability essential to amity and active concord among nations?

Democratic government, to the philosophy of which we are committed by heritage and by belief and under which we have prospered, depends for effectiveness upon the quality — the thoroughness, substance, and keenness — of public thinking on the major issues of the day. The acts of a democratic government are truly the acts of the people whom that government, by their consent, represents. If acts of such a government are faulty, short-sighted, unjust, they are so because the people have been heedless, selfish, unthinking; and those faulty acts will stand uncorrected until such time as the people are roused from lethargy to serious thought which will crystallize in better action.

The public thinking which thus comes to expression in government action, is the product of two forces. One of these, like the sparks over a lava flow, is spectacular, dramatic. It is the force exerted by the extreme pressure group rallied for specific action on an immediate issue or marshaled for continued agitation in support of some special interest. It can at times extend to coercing government while working lawfully within the frame of government. It is essentially direct action for self-interest. Not all direct action, fortunately, is of this kind; men can apply their energy and their skill directly to public problems with no self-seeking, and men do, as we all know. We need more such men.

The second force in the formation of public opinion, like the lava flow itself, moves more slowly and with far less of superficial drama. It is a vast force and in the end produces fundamental change. This is the force that operates through the long-term development of matured public opinion by the gradual influence of enlightened and disinterested citizens. Government by the people is really government by that portion of the people which takes the trouble to participate actively in the forming of public opinion. It is this fact which explains the feeling of responsibility for discussion of public questions and for sincere consideration of them — the feeling that every thoughtful man has experienced. It is indeed this fact which gives meaning and significance to a gathering such as this present one, where in all humility we try to examine into great issues and to determine our proper part in the resolution of them.

Professional groups in the nation are particularly aware of this feeling of responsibility — this duty — to take a conscious part in guiding the growth of public opinion and thus in shaping the forces which result finally in governmental action. This is a serious matter; it is no light thing for a man or a group to undertake deliberately to evoke and direct such forces. But professional men realize that theirs is a special obligation, for they must recognize that they, in their education and professional training, have benefited especially from the existence of organized society. They realize, too, that they stand in a unique relationship to other groups in the population and in a unique relationship to the population as a whole, and that the implications of that relationship are extremely important, not merely to them but far more to the people in general. This realization has always rendered the professional groups reluctant over plunging into militant partisan political action, for fear of jeopardizing that relationship. Yet by acceding to this requirement for caution they impose uneasiness upon themselves, for the recognized obligation — the social debt — still stands, and they are concerned over it.

To understand what this unique and socially valuable relationship is, and whence it comes, both defines the idea of a profession and explains the origin of the professional man's concern over the question of how and how much he shall participate in the formation of public opinion. The hallmark of a profession is ministry to the people — the disinterested and authoritative employment of special or superior knowledge for the counseling and the safeguarding of others. Ministry in the sense here meant is much more than service; it is marked by the ideas of dignity and authority, especially the authority arising from special training, special competence, high ethical conduct. Ministry is performed when one who has become an adept in higher knowledge through his devotion and study draws upon that knowledge authoritatively for the benefit of other people. That the idea of ministry is accepted by the people needs no demonstration; their acceptance of it is signaled by the prerogatives which the professional man is allowed to maintain, by his distinctive place in society, which is his because the people have reason for confidence in the integrity of his profession and for belief in its general beneficence.

That confidence and that belief are derived in some measure from the public's respect for the body of knowledge in which a professional group is adept and which it administers — a respect based both on the fact that the knowledge is personally valuable to the individual citizen and on the fact that the dignity of tradition and long heritage clings to it. In larger measure, however, the confidence and belief of the public in the beneficence of a profession are based on the fact that in their ministry to the people the members of that profession are disinterested, seeking first and foremost only to perform their ministry honestly and ably as required by their self-imposed code of ethics. I do not mean to imply by this statement that ministry inevitably demands a vow of poverty. If he is to be truly effective, the professional man may properly insist that he receive for his work a material return adequate to keep his mind free for full and effective performance. But his interest in material return is secondary. If it becomes primary, he ceases to be a professional man.

Since the authority and dignity which the professional man must have for the full performance of his professional function rely so heavily upon the fact that he is recognized as free of a controlling self-interest, it is natural enough that he should weigh carefully the matter of participation in political affairs. If he compromises his disinterestedness, he risks prejudicing his ministry. And he knows the importance to the people that that ministry be not prejudiced. At the same time, he cannot but recognize that the disinterestedness of the professions can often supply a highly needed balance wheel in social mechanisms, and that very often the authority of the professions in their own callings may lead the people to look to them for sound counsel on other matters.

For emphasis, I have set this dilemma out in large and plain terms, taking the hazard of overstating it in order to gain the advantage of putting it bluntly. We know that professional groups sometimes resolve it, for we know that they can and do contribute to strength and stability in government by directly sharing in and influencing the public thought on which these depend. On some occasions they have done so at no inconsiderable risk to their unique relationship to society, yet I believe that even

that risk can usually be avoided. It is instructive to review summarily the general course which some of these groups have followed.

The clergy, whose position as a professional group is most clearly a consequence of ministry to the people, have for centuries contributed to governmental vigor by their influence as a profession quite apart from their most profound personal influence as men of God. More and more in recent times they have taken the route of direct action, with all that implies of committees, petitions, signatures on manifestoes, and other activities, very often having to do with issues most remote from the professional competence of the individuals involved. In all likelihood, however, the vital effectiveness of the clergy in raising the general moral tone of the public mind, in increasing our responsiveness to humane values, has come in greater measure from the long-range indirect influence which is characteristic of true ministry, and there is serious question within the profession itself whether the superposition of direct activities is worth what it costs. In fact, this question is as old as organized religion itself.

The profession of medicine, with its long and distinguished history, its high degree of organization, and its unique code of professional conduct epitomized in the time honored Hippocratic Oath and vigorously maintained by the traditions of the profession, had and has great power and influence. We have seen sweeping changes in public thinking about sanitation, public health, and similar matters in the past hundred years. Yet it is only a little more than a hundred years ago that Dr. Benjamin Waterhouse was a voice crying in the wilderness here in Cambridge. The enlightenment that has come in the century since his time is testimony to the force which medical men have exerted. They have contributed greatly, as individuals and as a professional group, to the development of a public responsiveness and receptiveness that not merely accept but actively demand legislation unthinkable a hundred years ago. In the main, moreover, the profession of medicine has secured these and other good results not by short-range direct action, but rather by its long-range influence on the public mind.

Resembling medical men in their holding a particularly specialized place in the community, in their firm and comprehensive organization, and in their administration of self-imposed standards of professional conduct, lawyers as profession men are set apart by the fact that, in a government which is of laws and not of men, they stand necessarily in a special relation to public affairs. So much of the lawyer's work is done in terms of immediate issues, so many demands are imposed on him by the day-to-day hurly-burly, that it is easy for men outside the profession, and indeed, for some lawyers themselves, to lose sight of the core of knowledge and ministry that renders the law a profession in the real sense. For the same reason, lawyers in their endeavor as professional men to contribute to the formation of public opinion often appear mainly to be engaged in direct short-range action. But it is a fair question whether their long-range influence, as exerted by an Elihu Root or an Oliver Wendell Holmes, is not the greater source of the power which this profession wields in clarifying public thinking on great questions of justice and human rights.

Other professional groups in the population, partly because they are inherently more loosely defined than these three, partly because the knowledge which they



Erving Galloway, N.Y.

Government by the people is really government by that portion of the people which takes the trouble to participate actively in the forming of public opinion. It is this fact which explains the feeling of responsibility for discussion of public questions and for sincere consideration of them—the feeling that every thoughtful man has experienced.

administer is more remote from the daily concerns of the people, cannot be so clearly traced in their influence on public thinking. Teachers, for instance, constitute a profession, but it is not so homogeneous as the medical profession, perhaps because it lacks the provisions for indoctrination of neophytes and the formalization of entry into mastership which are characteristic of such organically matured professions as medicine and the clergy. No one would fail to recognize the great influence for good which teachers exert altogether apart from their work of instructing the youth in a particular discipline, yet to trace the operation of that influence is baffling, in large measure because teachers as a professional group have not attained and really do not need to attain the comparatively close-ranked unity and self-regulation which, for example, the legal profession maintains.

I make these last comments not at all for the mere purpose of listing some more professional groups, but rather because they are significant in connection with the question of assumption of professional responsibilities by scientists and engineers. The general question implicit in our review of the dilemma of the professional man is now squarely before us. Natural scientists—physicists and chemists in particular—who in the past have been primarily concerned with the perpetuation and extension of knowledge and so have been more scholars than professional men, are now reaching the status of a profession. Engineers, who have had professional consciousness as a group for a considerable period and have expressed it

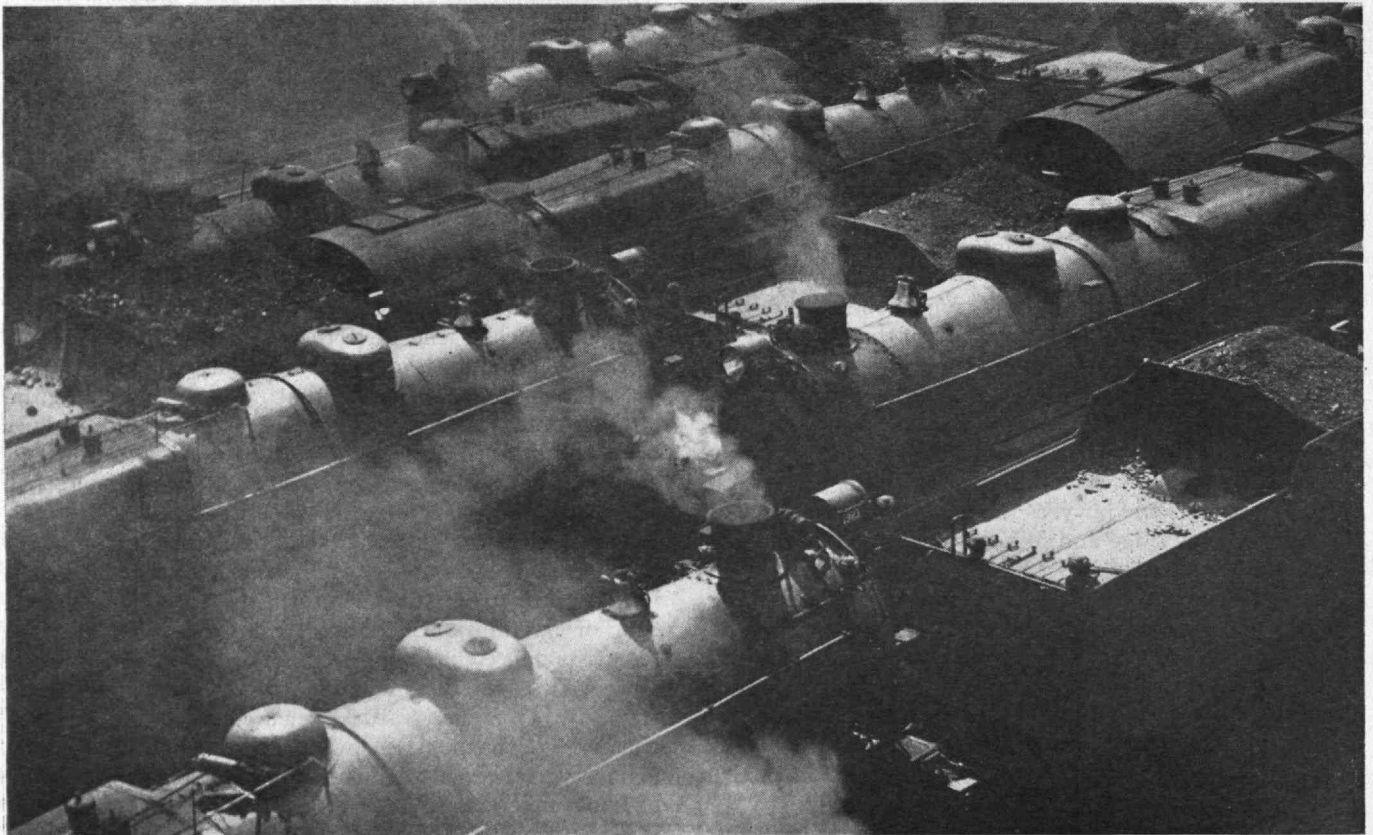
through their continued efforts to develop an agreed code of ethics, encounter some difficulty over professional status because of their linkage into the economic and industrial structure. Yet I believe it has come to be recognized that science and engineering are professions, although not all scientists and engineers are professional men.

Why this development? There are many reasons, but for our present purpose we need cite only the most plain and direct of them. The esoteric equations of the mathematician and physicist of but a few years ago have, as extended by further research, by applied science, and by technology and engineering, become a matter on which the future and the fate of mankind depend — the reality of the release of atomic energy. Here, in the dispositions which the nations of the world decide to make in order to control or not to control a vast new force, the scientist is perforce brought out of his laboratory, for sound dispositions capable of assuring just and feasible utilization of this energy for the good of all men cannot hope of realization without his active help. Even if he wished, the physical scientist of today can no more cling to the isolated contemplation of knowledge than a romantic 14-year-old boy can go back to the days of Buffalo Bill. Rather, because of his special competence in a body of knowledge that has come to be a vital issue for the people as a whole — and mark you, that means not the people of the United States alone, but the people of all the world — the physical scientist is possessed of the authority and must accept the responsibility that mark the professional man as distinguished from the simple scholar.

In passing, let me observe that this last assertion is well substantiated by the fact that in the United States science as a professional calling and scientists as profes-

sional men are asking of the people the special consideration and the special position to which none but the professional can rightly lay claim. The legislation by means of which the public would establish a National Research Foundation — legislation on which I have strong convictions — insofar as it confers on science and scientists a special relationship to the rest of American life, justified by their disinterested contribution to the whole of American life, marks the coming of age of science as a profession. It is for us as scientists and engineers to realize to the full that sharp and often onerous responsibilities accompany that special relationship.

As we do so — as we undertake to meet the responsibility of professional men to contribute as best they can to the formation of public policy — we encounter the same dilemma that other professional groups have met. It is assured that we shall exert a long-range indirect influence and that we will pay sincere heed to it. Shall we superpose on it efforts at direct action, and if so, how far shall we go in this direction? There are degrees in direct action, and the crux of the problem is to make sure that the desire to help speed a social advance shall not carry us to a point in direct action which in the end will mean a net loss to society. How far in direct action can the scientist as a professional man go without unduly hazarding the disinterestedness which makes him a valuable member of the community? The classic divergence of views of government in the days of Alexander Hamilton and Thomas Jefferson is recalled in the implications of this question. As I see it, for all the value that direct action often has to recommend it, direct action, in a social and economic structure so complex and so intricately cross-connected as ours, can be very dangerous. (*Continued on page 586*)



William M. Rittase

We have, within the month, seen this whole mighty nation brought to the very verge of impotence and frustration by the extreme action of a single small group in its population.



"Good Earth"

Photo by S. M. Hall

Applications of Science to Food Production

Promoting Peace or Unrest, the Supply of Food is Measured by the Extent to Which Technology is Employed in Food Production Rather Than by the Area of Cultivated Soil

BY HENRY A. WHITE

THE technology of international peace, it can be assumed, has as its primary objective the elimination of the fundamental causes of war. These causes, in large measure, can be attributed to the primitive instincts of man, the most portentous of which are greed and need. If success in building world peace is to be achieved, the legitimate wants of man, or in the aggregate the basic needs of nations, must be satisfied within reasonable bounds. Efforts in this direction should include improving production methods so as to make available to the greatest number adequate quantities of quality product at reasonable prices.

The world today, having passed through one great crisis, is now facing another. Famine haunts many countries, and its threat falls heavily over many more. History reveals, almost to the point of monotony, that hunger, or the fear of hunger, is one of the primary causes of war, as well as one of its principal results.

All that might be said about this condition would be but a repetition of what one reads daily in the press and hears by radio. None can fail to realize that starvation,

undernourishment, and malnutrition represent serious obstacles to world peace. Food is an essential in the preservation of life, in the prevention of disease and in nurturing the minds of men; therefore it is one of the strongest instruments for peace. A program of plenty, if aggressively prosecuted and designed to take advantage of approved scientific methods and modern equipment, can be a powerful factor in relieving the world of hunger, removing unrest due to this cause and promoting well being, prosperity, and peace.

Production of food in the United States reached an all-time high in the last six years. By way of comparison let me point out that in World War I farm production reached a point only nine per cent above its pre-war level. In World War II farm production increased 33 per cent over the pre-war average and was achieved with five million fewer farm workers than in 1940.

From this record of food production during the war and because of our current role in supplying world needs it would appear that, in addition to assisting in the present emergency, there is a continuing responsibility placed



An agricultural program would not be complete if it did not have as one of its objectives the preservation of good soil. . . . In contour farming the fields are designed to channel the heavy rains into slowly flowing rivulets, conserving at one time both the invaluable top soil and the badly needed moisture.

Photo from Hawaiian Pineapple Co.

upon America for future world production of foods. That responsibility is not solely one of feeding the peoples of the world or of continuing to tighten our own belts in order that others may eat. Such an approach does not strike at the root of the problem. There will always be demands for export of our surpluses, but a more realistic approach to the solution of world food problems would require us to make available to other nations knowledge that we have acquired in the science and technology of agriculture and the processing of foods.

Over the long run, and starting at once, home production of foods must be stimulated in each of the devastated nations — a normal commerce in foods must be reestablished. In this momentous task the talents of all qualified men must be brought into play; the engineer and the strategist, the geneticist and agronomist, the financier and economic geographer — each must bend his shoulder to the burden.

Let us examine for a moment the reasons for our ability to produce foods in substantial volume. In addition to advantages bestowed by nature itself they are largely due to improved technology, to more intensive and specialized use of the soils, to increased mechanization, and the application of science to food growing and processing.

To a considerable extent we have changed from a nation of diversified, small production farms, to a nation in which each region contributes that which it can produce most economically, with operations being conducted on a larger and more intensified scale. Cattle, wheat, citrus fruits, cotton, truck vegetables and other crops — all are raised in larger volume in those areas where environmental conditions are most advantageous for each. As an example, the islands of Hawaii, unsuited for large-scale production of temperate zone crops, have become mass producers of two subtropical products; sugar and pineapple. Here again selection of areas for each of these crops is influenced by factors of topography, elevation, climate

and water availability which affect quantity and quality of yields and economical production.

During the war marked progress has been made in the use of mechanical equipment on farms throughout the United States. For example, farm machinery purchased last year amounted to approximately \$1,000,000,000 in contrast to annual purchases immediately prior to the war of about half that amount. The use of tractors increased by one-third during the war year; grain combines by about 75 per cent; corn pickers 50 per cent; and milking machines by 100 per cent. It is also interesting to note that in 1929 less than 10 per cent of the farms were electrified, while today more than 45 per cent enjoy the conveniences of electricity.

As a result of expanded and more intensive cultivation, the use of fertilizer showed a substantial increase during the war. The value of soil conservation work has gained recognition, but there is much to be accomplished in this field in the interest of preserving soil fertility. Notable work has been done in the application of fertilizers, in pest control, in land reclamation, in plant genetics, in nutritional control, in weed control, in by-product recoveries and in other fields. Great progress has also been made in mechanization — today machines do most of the hard work that once caused men to leave the fields.

This latter development does not mean that farm workers are being deprived of their jobs; rather does it mean that their daily chores are being lightened, and that farm life is made less burdensome and more attractive. Mechanization of farms will serve as a means of attracting labor back to the farm with a consequent increase in food production and lower food prices.

It is these scientific and technological advances — which, relatively speaking, are only beginning to be developed — that offer hope for ultimate alleviation of world food problems. Illustrative of achievement in meeting the challenge of present conditions are some of the

accomplishments of corporate agriculture in the Territory of Hawaii. It is doubtful whether there is any section of the world that has a higher level of agricultural efficiency, measured in terms of crops produced per square mile of arable land, or where the application of science to agriculture is practised to a more effective degree than in Hawaii.

Since my work is in the pineapple industry, I am taking the liberty of giving you a brief description of cultural practices and of citing technological progress made in agriculture in this industry.

Pineapple culture is unique. It is one of the newer food industries of the world and prior to the founding of the Hawaiian Pineapple Company in 1901, commercial pineapple production was insignificant. Hence, no prejudices and few precepts were inherited and at every turn there were problems to whet imagination and test ingenuity. Among the early tasks was the problem of unravelling the nutritional requirements of plants. It seemed incredible that some of the finest lands yielded the poorest crops — until it was learned that the pineapple plant needs large quantities of iron. It is a strange anomaly that iron salts must be sprayed regularly upon pineapple plants, the roots of which feed in soil containing as much as 20 per cent of their weight in iron.

Pineapple in Hawaii is cultivated under four or five year cycles, that is to say, the fields are planted every four or five years. About 20 months after planting, the first fruit, known as plant crop, matures and when harvested, preparations are begun for the second or ratoon crop which will ripen a year hence. Not to deal in technical terms more than is necessary for clarity, let me mention three parts of a growing pineapple plant. The top of a fruit itself — the green shoots — is known as a crown. Just below the fruit itself is an off-shoot of the fruit-bearing stem, or slip, which contains a complete root system. Below the slip are additional off-shoots called suckers.

At about harvest time field workers remove all the slips and also may remove all but one or two of the suckers from each plant. Slips are generally used as planting material for the succeeding crops, but under certain conditions crowns and suckers are also used. The original stem itself fruits only once, but each of the suckers, the off-shoots of the stem, may bear a pineapple the following year. Then the plants usually are knocked down and preparations are made for a new planting. Sometimes, however, the plants are allowed to stand for still another year to bear a second ratoon crop, and this is what is known as a five-year cycle of cultivation.

The number of slips planted varies, ranging from 14,000 to 18,000 per acre. It is customary to plant the slips through mulch paper which serves to control soil temperatures and weed growth and to retain moisture in the soils. However, experiments are now being conducted in the use of abandoned pineapple plants as a mulching medium, and the results to date are promising.

Just prior to the harvesting season, a pineapple crop approaches a volume unbelievable to the uninitiated. The annual crop is measured in the hundreds of thousands of tons, and a very substantial portion of the fruit ripens during a short period of time — approximately 12 weeks.

As you probably know, agriculturists have made great strides in the control of pests that attack the superstructures of plants, but little had been done to control the millions of organisms that attacked the substructures. Nematodes — microscopic eel-like worms — have been especially destructive to plant life over the entire world, and there are wide assortments of other plant enemies, such as insects, bacteria and fungi, which have escaped man's war on predatory destroyers of plant life.

Nematodes are particularly destructive to pineapple plants. However, we were able to remedy this condition with the use of a soil fumigant which can be produced cheaply enough to permit its widespread use in agriculture

Home production of foods must be stimulated in each of the devastated nations; a normal commerce of foods must be reinstated. In this momentous task the talents of all qualified men must be brought into play; the engineer and the strategist, the geneticist and the agronomist, the financier and economic geographer — each must bend his shoulder to the burden.



Photo by William M. Rittase

over the world. The product most commonly used is known as DD, a by-product of petroleum refining, and large-scale producing units are in operation in California and Texas. There is every indication that it will not only produce healthy crops where scrawny ones grew before, but that its benefits will extend to the vegetable and flower gardens of the suburbanite. Other synthetic chemicals having the same characteristics are now being marketed, or are in process of development. Chloropicrin (a form of tear-gas) has also been used in Hawaii as a soil fumigant, but its use is limited because of its higher cost and the hazards involved in its application.

By introducing small quantities of this volatile liquid, DD, into the soil, it is possible to kill nearly all of the subterranean organisms that attack the root structure, stunt plant life, and reduce yields. In badly affected areas we have increased pineapple production from 10 to 20 tons an acre by soil fumigation and there are vegetable gardens in the Islands which have doubled their productivity. Government tests over the country have confirmed these results.

Individuals familiar with conditions estimate that through the use of this low-cost fumigant, some two million acres of land in the Southern States alone can be made productive again. Similar reclamation in other parts of the world, where soil has become too badly infested to make farming profitable, can likewise be brought about. Of course, the effect of such measures on food production is obvious.

The use of hormones for the control of fruit ripening is another significant development. There was a time when the magnitude and spread of the pineapple harvest was solely dependent upon factors of environment over which little control could be exercised. Now research has produced a chemical that makes it possible to have fruit almost at will. Widespread application has been made of alphanaphthaleneacetic acid and related hormones. Two or three teacups, applied in water solution, will force flower-

ing of the nearly two million plants on 100 acres. The application of these chemicals has no measurable effect on the quality of the resulting fruit but serves only to change a vegetative plant into a fruiting plant.

The use of hormones for retarding the ripening of fruits already formed has also been carried on with some success. Experiments to date have shown that, in addition to holding the pineapple "on ice," so to speak, the size and weight of the fruit can be increased. However, caution must be exercised in the selection of the particular type of hormone used for this purpose so as to obviate disruption of normal physiological functioning of plants which is essential to fruit quality.

Another utilization of agricultural chemicals is the mechanical application of chemical weed sprays, which has supplanted, in large degree, the tedious time consuming hand weeding of earlier eras. Mixtures of diesel oil and water, emulsified by using fish oil soaps or other suitable agents, are employed for this purpose. To the emulsions are added chlorinated phenols which are said to "activate" the mixtures herbicidally. Such mixtures are broadcast by sprays upon the young fields, prior to active growth of the pineapple slips. To prevent damage to plants and fruit, during later stages of the pineapple development, the sprays are used in conjunction with mechanical cultivators between the pineapple beds.

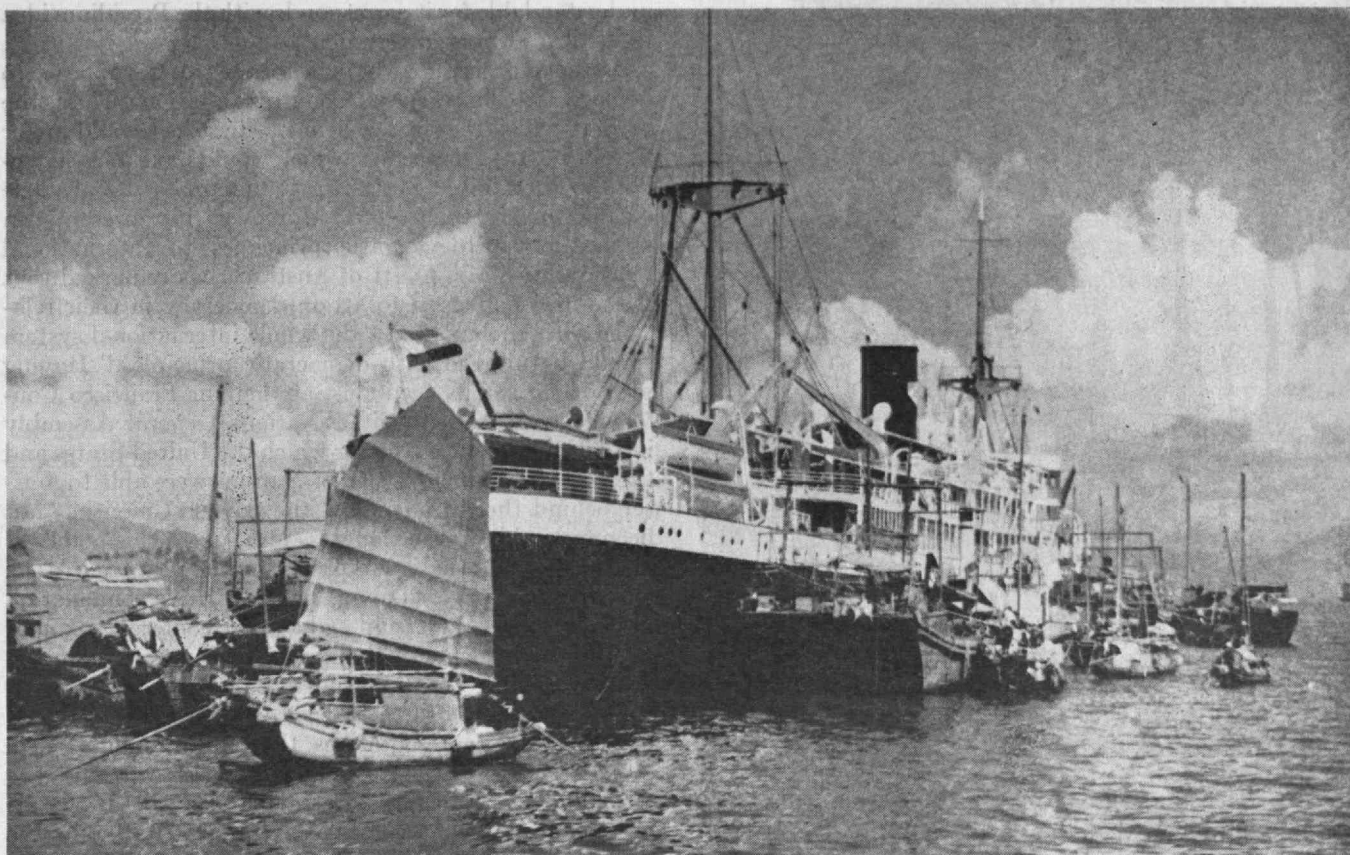
Other examples might be given of the way in which chemicals are being used to contribute to better and more abundant pineapple crops, lower costs, and greater land use. In addition, our laboratories, and those devoted to the improvement of other crops, have many interesting developments now in the experimental stage. Those cited illustrate the progress made in this field, however.

Giving due weight to improved agricultural technique just referred to, an agricultural program would not be complete if it did not have as one of its objectives the preservation of its most vital requirement — good soil. Being appreciative of the value (*Continued on page 606*)



Photo by Standard Oil Co. (N. J.)

Our responsibility to our neighbors . . . is to pass on the fruits of our technology in order that they may stand on their own feet.



Trading at Hong Kong

Screen Traveler, from Gendreau

International Relations in a Scientific Age

Progress Requires Research, Technology, and Efficient Government. Scientific Personnel, Trained in International Affairs, is Needed to Pioneer in Human Relations

BY NORMAN J. PADELFORD

IT is no exaggeration to say that, notwithstanding the logic and orderliness of science, we are living in a confused and troubled world. For all of their contributions to mankind in the improvement of standards of living, the facilitation of communications, and the provision of a rich diversity of goods, science and technology have also contributed directly and indirectly to the unrest and conflict which are so apparent in the present-day economic and political scene. Likewise they have been instrumental in laying the basis for revolutionary changes in international relations which seem destined to affect the life, the business, and the safety of every man and every nation.

A large part of the unprecedented destruction wrought by World War II has been due to the application of western science to military weapons. Through the development of mass production, made possible by modern technology, labor conditions and foreign trade the world over have been widely affected. Moreover, as a result of modern industrial techniques, a rapid depletion of certain strategic and critical raw materials has been taking place. Furthermore, through the more recent developments of

science, new power factors have been introduced into the relations between nations.

The technological revolution has benefited mankind economically. Frankness compels us to acknowledge, however, that it has at the same time complicated the task of government internally and political relations internationally. By increasing the interdependence and multiplying the contacts between nations it has increased the friction areas among them. By increasing the demand for certain scarce commodities it has augmented the competitions likely to lead to conflict between nations. It has made the adjustment of political difficulties more delicate. It has necessitated faster action in dealing with crises. Above all, it has magnified the physical power of the national state while human and political power remain much the same.

It is at such a juncture that international peace must now be made. Of all the peace settlements in modern history, the present one is the most epochal. Raymond Fosdick has said that mankind now faces "its last chance;" that 1946 is "the most crucial year of western civilization." Whether the choice has been narrowed



Photo by Stanley Witt

down to such finite limits may be debatable. It is conceivable, however, that the next twenty-five years may well be the most fateful in modern times.

There are certain extraordinary circumstances surrounding the determination of international relations at the present time. For the first time in modern history there is no truly Great Power on the continent of Europe. There are only three Great Powers, in the sense of decisive military power, — one in the new world, one quasi-Asiatic, and the third a loosely knit world-wide commonwealth with one of its focal points located in the British Isles. World peace hinges in large measure upon the actions and the relationships of these three super powers. If they agree and concert their efforts international peace can be assured. If they fail to agree there can be no world organization, worthy of the name, nor can there be lasting security. If they collaborate through the United Nations, or any other world organization, economic welfare can be improved and standards of living everywhere can be raised. If they cannot cooperate, constantly mounting proportions of national economy must be earmarked for war purposes.

A second circumstance of serious import at the moment of facing toward international peace is that new physical and political powers have been acquired by the three Great Powers at the same time that suspicions and conflicts between them have been multiplied. This is a portent both of difficulty and of danger. It complicates the task which has had to be assumed by the three powers never before brought face to face with each other for such a responsibility as victory in World War II has thrust upon them.

In preparing the peace, three alternate procedures have been possible. The first of these is the establishment of the peace by a Great Power directorate. Under such a procedure the Great Powers would draw up and enforce the treaties of peace. This is the method which the Soviet Union would prefer to follow. In a way, this is readily

understandable for it corresponds with the Presidium idea in its own form of government.

A second procedure would be for the treaties of peace to be negotiated in a general Congress of nations. This is the method which the smaller democratic states would prefer to follow. It is a procedure which would have been agreeable to the United States for it minimizes the obstacle of the single nation veto. Moreover, it represents an application of democratic principles to international relationships. Mr. Evatt of Australia has remarked that if the nations intend to attain democracy in their relations with one another, "the whole international system should be imbued with democratic principles." Having seen on numerous occasions, at the San Francisco Conference and at the United Nations General Assembly in London, the voting power which the United States and the British Commonwealth of Nations were able to muster behind their leadership, the Soviet Union has not been favorable to the Congress idea, up to this point.

The third alternative in preparing the peace is the one which has been agreed upon. This involves a combination of Great Power leadership and a peace conference. Under existing arrangements the treaties of peace are being drafted by the Foreign Ministers of the Great Powers which signed the surrender agreements. When agreed upon by these representatives, they will be submitted to a conference of all states which were at war with the defeated states, much as the Dumbarton Oaks Proposals for an international organization were first drafted by the Great Powers and then submitted to the San Francisco United Nations Conference.

Thus far, the efforts of the Great Powers to re-establish peaceful international relations have not been successful. The Council of Foreign Ministers had made distressingly slow progress on the treaties with the satellite states, and wide area of disagreement continues to exist between the Foreign Ministers of the United States, the Soviet Union, Great Britain and France over certain fundamentals of the peace. At the same time, fairness compels us to recognize that the issues involved in making international peace are exceedingly complex, and that negotiation between the Great Powers is a laborious, time-consuming process. Many persons have been inclined to minimize the difficulty of the problems involved and the time required to reach satisfactory agreement upon them. Treaties of peace are designed to fix a status quo for a long period of time. The issues tied up with them must consequently be weighed with care.

To date, the Foreign Ministers have spent two months in session trying to draft the treaties of peace with Italy and the Eastern European ex-enemy states. Compared with the time spent in previous peace negotiations this is very brief. In 1919 President Wilson personally spent five months at the Paris Peace Conference negotiating with the principal allied and associated powers on the treaty of peace with Germany. Even after this treaty was completed a full year of negotiations between the Foreign Ministers and then the Conference of Ambassadors was necessary to reach agreement on the treaties of peace with Austria, Bulgaria and Hungary. The treaty of peace with Turkey was not concluded until four years after the end of World War I.

Candidness makes it necessary to add a word of caution. There may be some fundamental issues of principle involved in framing international peace today upon

which the Great Powers will not be able to reach entire accord without one side giving in completely to the other. Although there are few occasions in world politics in which any Great Power can have all affairs arranged as it believes best, there may be some principles in the present situation which neither side may be prepared to sacrifice. Consequently, further time may have to be allowed for negotiations, or arrangements made which will not seem altogether satisfactory to all concerned. In any event, agreement can be reached only if there is good will and a genuine disposition on all sides to cooperate toward the achievement of common objectives.

If the Foreign Ministers fail to agree at the next meeting in Paris, or in subsequent gatherings, what other courses are open? There would appear to be three possible moves which might be attempted: (1) the calling of a general peace conference; (2) the conclusion of separate peace treaties; (3) reference of the problem to the United Nations General Assembly.

Difficulties are apparent in each of these proposals. If one of the Great Powers is unable to agree upon certain terms of peace in the Council of Foreign Ministers it is conceivable that this same country would find it equally difficult to agree upon those terms in a general peace conference — if that country should be present. A formidable show of opinion might be mobilized in such a conference, and an objecting party might bow to the general will. On the other hand, unless some understanding could be reached among the Great Powers in this process the conference might extend the existing rift. The experience of the years between 1920 and 1945 should still be vivid enough in the minds of all to warn against the dangers which will arise if the powers which won this war fall apart as did the coalition at the end of World War I. The discovery of some formula for unity among the Great Powers is essential to peace and security.

To try to conclude separate peace treaties might prove to be very difficult. The western nations might be able to conclude a treaty of peace with Italy, and the Soviet Union might conclude a peace with the defeated nations in Eastern Europe. But the iron curtain already suspended across Central Europe might descend so completely that the western nations would find it impossible to conclude treaties with Bulgaria, Hungary, Roumania and Finland.

If the inability of the foreign ministers of the Great Powers to draft the treaties should be referred to the General Assembly of the United Nations, what contribution might this body make? Under the terms of the charter the General Assembly would not have the authority itself to undertake the writing of the treaties of peace. Moreover, any difference among the powers which had not been resolved in the Council of Foreign Ministers, or in a peace conference, would certainly appear in the General Assembly as well.

On the other hand, under its powers of discussion and recommendation concerning "general principles of co-operation" or "questions relating to the maintenance of international peace and security" (Articles 10-11 of the United Nations Charter), the General Assembly might be able to offer valuable suggestions for circumventing an impasse in the peacemaking.

Under Article 13 of the charter, the General Assembly might initiate studies and make recommendations for the purpose of "promoting international cooperation in the

political field." Under Article 14 it might recommend measures "for the peaceful adjustment of any situation, regardless of origin, which it deems likely to impair the general welfare or friendly relations among nations," and it might call the attention of the Security Council to the situation.

Although the General Assembly would undoubtedly encounter opposition if a stalemate among the Great Powers were referred to it, nevertheless it might prove to be the salvation of the peace and demonstrate its pre-eminence among the organs of the United Nations.

On the whole, given the area of agreement already attained among the statesmen, and a generally apparent desire on all sides for the establishment of international peace, there are grounds for hope that with time, patience and vision, agreement may be reached upon treaties of peace with Italy and the smaller ex-enemy states in the not too distant future. Having explored their differences in the work upon these treaties, the Powers will then be in a position to commence consideration of the treaties with Germany and Japan.

Agreement upon the peace treaties must not blind us, however, to two things. In the first place, there may remain among the Great Powers certain antithetical concepts of international relations, and certain conflicting political and economic aims, which will afford fertile soil for future differences, making the path toward permanent peace difficult. In the second place, there may well continue to be a struggle for the balance of power within the United Nations.

Many persons, including a number of eminent scientists, have argued that the United Nations organization cannot secure peace in an atomic age, and that it should be converted at once into a world federation endowed with "real" powers.

There can be no denial that in operation thus far the United Nations organization has fallen short of expectations. Nevertheless, the San Francisco Charter was not



Photo by Chester H. Pope, '09

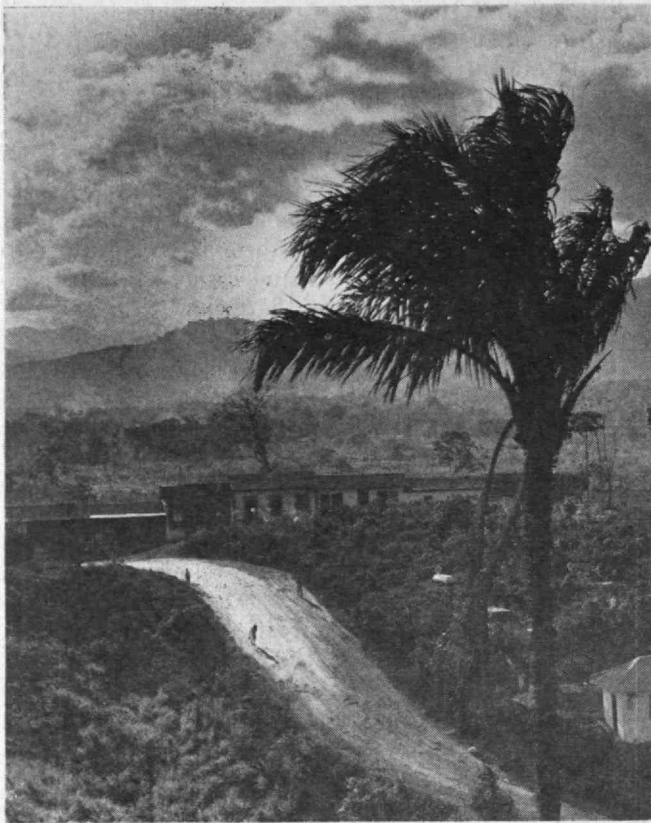


Photo by Vachon, Standard Oil Co. (N. J.)

the lowest common denominator. It was the highest common denominator that could be obtained from the nations as a result of three years of laborious negotiation. Given what we now know, any attempt to revise the Charter at this time in the direction of a stronger organization would face the possibility of disaster.

World union can be attained only by consent or by coercion. The world has rejected coercion in overthrowing the Nazi menace. It would oppose coercive efforts by any other nation or group of nations. Consent can be obtained only on a basis of mutual respect and understanding. It took 500 years to reduce some 400 to 500 political entities in Europe at the end of the Middle Ages to the present 50 states. It is too much to expect that 50 nationalistic, suspicious states can be merged into one world union overnight. International affairs move with a gradualness to which we must school ourselves. Provided there is a common will to move forward in the long run toward a higher goal a small amount of progress at any one time may be preferable to the failure of more perfect schemes on paper. This was the viewpoint which was held by the Conference at San Francisco last year. It was recognized that the United Nations organization was far from perfect; that the Security Council, General Assembly and International Court of Justice were not endowed with all of the powers which they should have for most effective functioning. It was appreciated that there might be trouble with the Great Power veto in the Security Council. Nevertheless, it was the consensus of opinion that even with these shortcomings the organization might succeed where the League of Nations had failed, and that after the nations had gained experience in working together within the framework of the Charter as it was adopted, amendments might then be agreed upon, as in the case of the Constitution of the United States, to make a more perfect union.

Former Secretary of State Stettinius has recently and aptly said that the time has come "to put the engines of the United Nations at full speed ahead, not to stop in order to experiment with redesigning them." Given wholehearted support by the democracies and a moderate degree of cooperation among the Great Powers, the United Nations may yet render yeoman service to the cause of peace, security, and social advancement.

Analogies are dangerous things in human relations. Because federation has worked in the United States is no token it will work in "one world." There are factors in the relationships between the present sovereign states of the world which were never present among the colonies which formed the Union in 1789. Those who shun the use of analogies in the exactitude of the sciences should beware of their use in the inexact relationships of men.

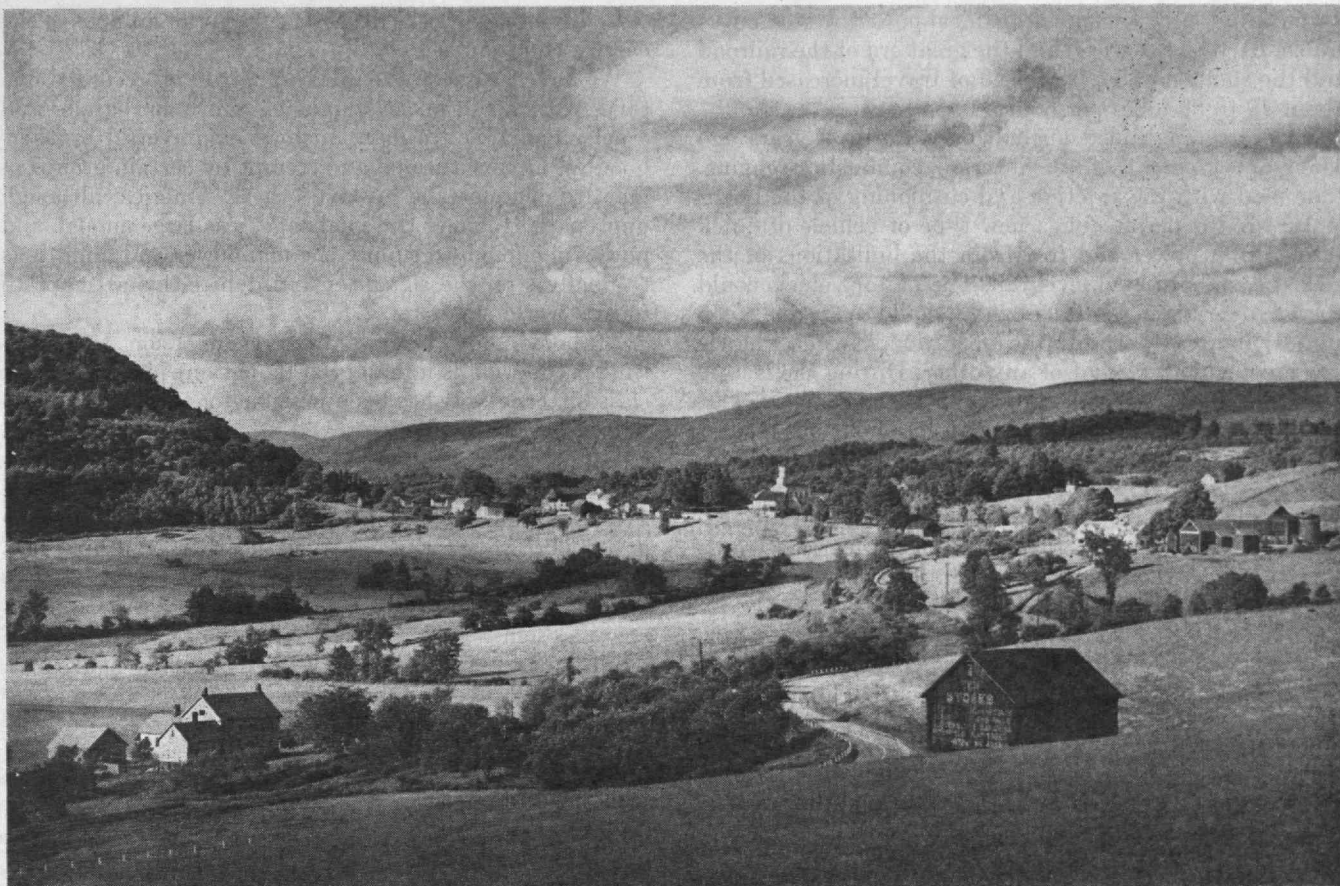
Experience would appear to demonstrate that the form of international government is of less consequence than the determination of states to settle disputes peacefully and to regulate international affairs by common action. If the United Nations cannot be made to work today, world government could not be made to work. If the United Nations can be made to work today, a stronger form of government may be possible tomorrow. What is needed above all is the discovery of some way of getting the United Nations to operate on a more internationalistic rather than multi-nationalistic basis. As one having a large stake in the success of the organization, the United States should search actively for policies and techniques which will promote the growth of the organization and unity among the nations.

Success in international relations in previous periods of time has depended primarily upon statecraft and military power. In the scientific age, success will depend as well upon organized scientific research, the maintenance of a large war potential of technology and industry, and an efficient form of government adapted to modern conditions. It seems a simple truth to say that the United States must find some way by which it can become a more disciplined democracy. Without going to the extremes of dictatorship, means need to be found whereby the strength of the nation will not be impaired by periodic labor and economic crises. Otherwise, the nation will not be able to fulfill its commitments abroad, and it runs the risk of being caught impotent in the event of an international emergency.

There are certain *sine qua nons* for the United States as it embarks upon its position of leadership in international relations in the scientific age.

Granting that there appear to be no immediate military threats arising abroad, nevertheless, the success of America's "peace offensive," as Secretary Byrnes termed it, as well as the safeguarding of the line against the further weakening of democracy by totalitarianism, point to the need of the United States having an armed establishment proportionately equal to that of any other Great Power, ready for instant action. Overseas bases should be maintained, not abandoned or deprived of their equipment, until all of the treaties of peace have been concluded, the procedure of the United Nations ironed out and the present differences between the Great Powers reconciled. Weakening America weakens the United Nations as well. Weakening the United Nations undermines the tenuous base upon which international peace rests.

(Continued on page 588)



Vermont Farm

Photo by Ewing Gallaway

Looking Ahead After 50 Years

Technology Provides Higher Living Standards Only When Man's Freedom and Dignity are Respected. Individual Freedom is Threatened When Control of Labor or Capital is Monopolized

BY P. W. LITCHFIELD

ON the occasion of Alumni Day it has been customary for a representative of the class of 50 years ago to address you. This year that opportunity falls to the Class of 1896. All members of that class who are still living have completed the biblical span of three score years and ten. We can look back on a life full of personal experiences and observations of a great variety of world-wide events. Recalling the wise old saying, "Old age for counsel, youth for action," I hope you will pardon me if I turn your thoughts to serious matters for a short time.

During the Twentieth Century, which is now about half completed, there occurred the greatest progress in scientific and material development of any similar period in the world's history. The Massachusetts Institute of Technology, under the brilliant leadership of President Compton, has played a great part in this development.

As each of us grows older, time appears to go faster. The same is true for the world as a whole, for the tempo of life is a constantly quickening one. Progress in the material things of civilization is measured largely by ad-

vances in transportation and communication. If, as an example, we consider the advances which have been made in transportation, it is clear that the progress of civilization has been paced by the developing methods of transportation from foot to wheel to wing.

It happens that the Class of 1896 and the automobile—one of the greatest advances in transportation—began their careers together. I remember writing an essay on Winton's "horseless carriage" during my senior year. The Golden Jubilee 50th Anniversary of the automobile is being fittingly celebrated this month in Detroit. Although the past 50 years have been largely an automotive era, let us review briefly the progress of transportation throughout the centuries.

Centuries ago man went no farther nor any faster than he could walk. Development came slowly when the motive power on land was by domestic animal and on the sea by wind. Even under these conditions, however, empires were slowly built and the world was circumnavigated.

One hundred years ago mechanical power by steam was transmitted to the wheel and the great era of the railroad and the steamship began. Speed of travel increased from about 10 to 30 miles per hour.

This pace continued unchallenged until 50 years ago when development of the internal combustion engine, combined with the traction and cushioning of the pneumatic tire, made possible a new type of vehicle of quick accelerating power and free from the limitations of the inelastic, smooth, and level rail. The motor vehicle could operate over uneven surfaces and it could overcome steep grades; more important, the operation of each vehicle was independent of that of any other. During the last 50 years, which has seen the growth of the automotive era, speed of travel increased to 60 miles an hour or more.

Today we face additional changes brought about by that greatest invention of all history — the airplane — which fulfills man's desire for conquest of the air. No longer an earth-bound creature, man has carried transportation into the third dimension. The speed of transportation, suddenly increased to more than 250 miles an hour, shrinks the world to practically one twenty-fifth the size it was a hundred years ago. During the last 50 years, the automobile has made all of us neighbors within the nation and so during the next 50 years the airplane will make all mankind throughout the world neighbors.

Through the development of mass production, scientific management, and world-wide distribution of the products of industry and agriculture, the power to produce has been multiplied a thousandfold, enabling the earth to support an increasing population with a higher standard of living. The power to destroy has increased as rapidly as the power to produce, so that the product of years of civilization can be destroyed at one blow.

The destruction of physical tools of production and transportation, caused by the recent war, has created the greatest famine of all times. The cry, "Give us this day

our daily bread" is the desperate prayer of millions of the earth's children.

We have just seen the greatest war in all recorded history, with countless examples of man's barbarous and cruel inhumanity to man. Instead of universal brotherhood we have witnessed an attempt by certain groups of men, to conquer and enslave others. America, although unprepared to meet this challenge, was large enough and powerful enough to supply the manpower and munitions to finally stop the slaughter and defeat this attempt to form a world superstate.

At home, however, we find reconversion to peacetime production is interrupted by nationwide strikes and class bitterness. It has been possible for the earth to provide a progressively improved standard of living to a constantly increasing population when the tools of production have been used efficiently by labor, and when all available knowledge of better processes and methods have had opportunity for practical application. Anything that stops this coöperation, causing idle or inefficient labor or idle or inefficient use of capital, stalls progress and encourages selfishness and greed. Instead of producing more wealth for everyone to share, men start to fight for a bigger share of what has already been produced, and civilization retrogresses.

As long as there is a fair division of the goods produced and each person receives a fair reward for his part in the production, harmony and progress prevail. As long as each individual is free to bargain for the use of his services or the use of his savings in a free and competitive market, the incentive for production is stimulated. Under monopoly or the subjugation of the individual to a dominant power, incentive to produce is decreased.

In a free country, wealth, honor, and power must be earned and must be shared and the widest possible range of opportunity must be provided for the public.

Currently there is a general feeling of unrest as to the national and international future. It seems to me that both situations have the same underlying cause and require the same remedy. Some of the lessons we learned at M.I.T. 50 years ago might well be applied today.

In its senior year, the Class of 1896 was fortunate in having two great teachers whose words of wisdom made a lasting impression on all our lives. One was Louis Brandeis, then a Boston lawyer, who later became an illustrious justice of the Supreme Court. He stood for the dignity and freedom of the individual, the protection of the weak against the aggression of the strong. He held that justice under law should overcome selfish force.

The other was our beloved president, Francis A. Walker, who gave us our course in political economy — the science of the production of wealth. He

(Continued on page 596)



William M. Rittase

ALUMNI DAY—JUNE 1946

The Technology of International Peace

Looking forward to World Peace, Harmony in Domestic Reconversion, and a New Era for M.I.T., Unprecedented Numbers Attend Alumni Day, June 8, 1946

DESIRE for tranquility was uppermost in the minds of Alumni and their wives who, after five years of war and one year of unsettled "peace," returned to M.I.T. on June 8, to view exhibits illustrating the Institute's part in World War II, to listen to three outstanding papers of a symposium devoted to "The Technology of International Peace," and to convene for the well-known Stein-on-the-Table Banquet. Missing from this year's activities were members of the graduating class for, as a result of the disarrangement of usual class schedules by the war's accelerated courses, there were no commencement exercises in June. Degrees were conferred on 220 members of the Class of 6-46 in informal ceremonies in Walker Memorial on June 14. Notwithstanding the absence of a new crop of graduates, however, Alumni Day was attended by record numbers. The banquet set an all-time high with an attendance of 1300, representing a gain of 58 per cent over last year.

Those taking part in Alumni Day activities bore an air of optimism and hope such as has not been evident since the latter part of the last decade, and good fellowship was the order of the day. Nevertheless a note of seriousness was injected by the realization — which found emphatic expression in symposium and banquet addresses — that individual freedom is threatened whenever and wherever selfish and powerful minority groups engage in monopolistic tactics, or attempt to place their own welfare above that of the nation.

Exhibits

AFTER registering in the main lobby of Building 10, Alumni and their friends had the morning free for visits to members of the faculty and staff or to the Institute buildings, which have undergone considerable expansion during the war.

Under the guidance of Herbert L. Beckwith, '26, Chairman, the Exhibits Committee organized and had on display numerous exhibits featuring the activities of the departments and laboratories. For many alumni, June 8 provided their first opportunity since the war's end, to return to M.I.T. and with this thought in mind, exhibits were planned to outline some of the highlight activities which transpired at the Institute during the war.

Clinic Dedication

AT 11:45 A.M., ceremonies were held for the dedication of the William R. Kales Eye Clinic in the Homberg Memorial Infirmary. The new clinic is a gift from Mrs. Kales in memory of the late William R. Kales, '92, who

was a life member of the corporation. Mrs. Kales and her son, Robert G. Kales, '28, were present at the ceremony at which President Compton spoke of the value of this educational service in the Institute's medical program for the benefit of students and members of the staff.

Dr. Thomas Cavanaugh, who is in charge of the eye clinic, explained the purpose of this medical service and the equipment used in eye examination.

Among those present were members of the Medical Department Visiting Committee, including W. Cameron Forbes, William J. Mixter, '02, Samuel C. Prescott, '94, Reginald H. Smithwick, '21, James H. Means, '06, and John F. Gile. The Class of 1892 of which the late Mr. Kales was a member, was represented by Charles E. Fuller, Harry J. Carlson, and George H. Ingraham.

Members of the M.I.T. medical staff who attended the dedication were Dr. George W. Morse, director; Dr. John W. Chamberlain, '28, assistant director; and Lawrence B. Anderson, '30, and Herbert L. Beckwith, '26, the architects who had charge of the recent remodeling of the medical department.

When the hour was noon, groups began assembling in the du Pont Court for the buffet luncheon. Special tables were reserved for the 25-year and 50-year classes. Alumni of all classes intermingled in an informal atmosphere.

International Peace

AT the Institute, the day's events reached their peak in the symposium, "The Technology of International Peace," given in Walker Memorial. Charles A. Edison, '13, chosen as presiding officer, was unfortunately unable to attend, and his place was taken by George R. Harrison, who introduced the symposium speakers, Vannevar Bush, '16, President of the Carnegie Institution of Washington,



All photographs by M.I.T. Photo Service
President Compton, Mrs. William R. Kales, and Robert G. Kales, '28, at the dedication of the new William R. Kales Eye Clinic. The portrait of Mr. Kales, who was a life member of the Corporation, will hang in the Homberg Infirmary.

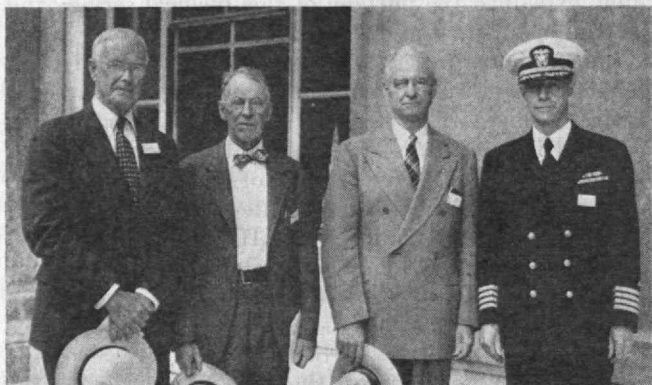
Henry A. White, President of the Hawaiian Pineapple Company, and Norman J. Padelford, Professor of International Relations. Dean Harrison's introduction was in light-hearted and witty vein, and by popular request is, in part, reproduced.

In substituting for Mr. Edison, I shall endeavor to adhere to the established rules of the Introducer's Union. Although the name of the first speaker is emblazoned on the program for all to read, it is not considered cricket verbally to specify his name until his topic and attainments have been properly set forth; then as a climactic thrill, his identity may be revealed in the closing words of the last sentence. Therefore without making any tempting reference to "beating around the bush," I shall outline some of his attainments, . . .

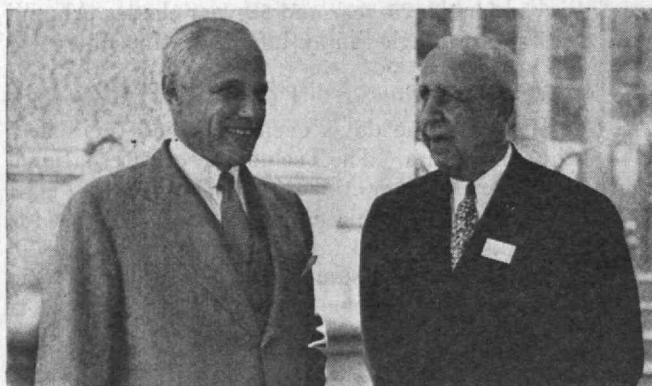
I suppose that this individual combines in his personality most of the qualities to which we of Technology like to point



In the morning the lobby of Building 10 was gathering place of those who wished to register or to meet friends and relatives, while . . .



Alumni Day provided opportunity for family and class reunions for the brothers J. A. Patch, '00, C. E. Patch, '02, R. R. Patch, '06, and Captain E. L. Patch, '10, left to right.



President Compton and Paul W. Litchfield, '96, engage in informal conversation during the luncheon in du Pont Court.

with pride when we say, "He is a Tech man." He has that shrewdness which has been dignified by the adjective Yankee, coupled with the imaginative insight, crusading zeal, and tenacity of purpose which we like to think of as typically American, and that gift of combining the tangential and the radial viewpoints which we know as humor. If the term did not already have other connotations, one could refer to him as a "Happy Warrior"; I must, under the circumstances restrain myself by calling him a "Cheerful Scrapper."

When two hydrogen atoms and one oxygen atom decide to combine to form a water molecule, they must have a nucleus on which to condense. Our first speaker, during the past six years, has furnished such a nucleus for the scientists of America. Without his catalyzing imagination the scientific contribution to the winning of the war would have been far less than the event has showed. If this were England he would long since have been knighted and baroneted, and would even now be Lord Bush of Barnstable, or some such personage . . .

I come now to the official revelation of the identity of this first speaker, and find before me the horns of a dilemma, or since there are three horns, a trilemma. Although I have known him for 16 years, as Dean of Engineering, Vice President of the Institute, chief of superchiefs in the Office of Scientific Research and Development, and inventive crony, and have called him by many names, I have never learned how properly to pronounce his first name. Since he speaks often, this is a situation which must confront many introducers, so I have had recourse to one of Bush's guiding tenets — "When you face a difficult problem which requires repetition, mechanize it at the start." I have therefore caused to be embalmed in a short stretch of verse the trilemma which I face.

'Tis said that Bush, before the war,
Was often known as Vanney Var,
Though persons every bit as clever
Were prone to hail him as Van Never.
Yet who shall call those ev'n naiver
Who introduce him as Van Neaver?

All this despite the fact that he
Signs letters with a simple V.
When Bush adds more it causes trouble
For all is indecipherable.

Van Never, Neaver, Vanney Var,
Whichever of these three you are,
Do not despise the cautious man
Who hails you forth as simply Van!

This may not completely solve our problem, however. A friend from Holland once protested bitterly against being called Van. "A Dutchman's name is Van Dyke, or Van Broeck, or Van Snorter. You do not call him Dyke, or Broeck or Snorter, you call him Van. Do you know what Van means? It means "of." How would you like to be called Of or From or Maybe? The present case, however, is different. Ladies and Gentlemen, I give you Van (and I don't mean "Maybe") Bush!



In usual order, Vannevar Bush, '16, J. R. Killian, '26, and Redfield Proctor, '02, represent Corporation, Administration and Corporation.



... the ballroom at the Statler Hotel was filled to overflowing at the Stein-on-the-Table banquet in the evening of Alumni Day.

Dean Harrison's introductions of Henry A. White and of Norman J. Padelford were equally able, even though they were not based on so long a personal acquaintance as was the case with the first speaker. The Review is happy to publish, elsewhere in this issue, the three papers presented at the symposium.

Banquet

As they had done many times before, loyal alumni gathered at Boston's Hotel Statler as the sun sank in the west, to spend a few hours of good fellowship at the Stein-on-the-Table Banquet. Ballroom facilities were taxed to the utmost in the largest banquet of its kind.

As toastmaster, A. Warren Norton, '21, President of the M.I.T. Alumni Association, introduced the honored guests and generally kept the banquet to the schedule established by hard-working committees. From time to time O. B. Denison, '11, led cheers or singing with the able support of George Wheeler, soloist, and Earl Weidner, organist. As usual, the steins, designed by Henry B. Kane, '24, and depicting good fellowship of the five allies became highly prized souvenirs of a gala event.

In recognition of his long and faithful service in caring for the health of students and staff, and for his work in building up the medical unit from a single physician's office to the present well equipped Homberg Infirmary, honorary membership in the Alumni Association was conferred upon Dr. George W. Morse, who was for 26 years, Medical Director at the Institute. In recognition of his war-time services, honorary membership was also conferred, in absentia, upon Lee Alvin du Bridge, dean of the Faculty of Arts and Sciences at the University of Rochester, and director of the Radiation Laboratory.



Professor Emeritus D. C. Jackson greets Mr. and Mrs. A. Warren Norton at the du Pont Court luncheon.

Assistant Class Secretary, Carole A. Clarke, '21, made the presentation of the gift from the 25-year class. Desirous of perpetuating the names of those alumni who have given their lives to attain the objectives of freedom during World War II, the Class of 1921 has agreed to underwrite a suitable war memorial to be selected by representatives of the administration and of the class.

Assuring us that the Class of 1896 was composed of "just average, run-of-the-mine alumni, without any of the prominent tycoons of some other classes," Charles E. Locke, '96, presented a gift of \$10,000 from the 50-year class. The gift of the Class of 1896 was made without any restrictions as to its use, and was accepted by President Compton.

Striking a serious note in commenting on this nation's



Symposium speakers Norman J. Padelford, Henry A. White, and Vannevar Bush gave papers on the general theme "The Technology of International Peace" after being introduced by George R. Harrison.



William L. Campbell, '15, Alumni Day Chairman (right) entertains Mr. and Mrs. Henry A. White in the open air, informal luncheon.

post-war domestic reconversion, Paul W. Litchfield, '96, called for a return to those principles which were taught 50 years ago at Technology by Louis D. Brandeis, then a young Boston lawyer, and the Institute's former president, Francis Amassa Walker. Mr. Litchfield's address, "Looking Ahead After 50 Years" appears on page 565 of this issue.

A New Era

IN his annual report of progress, President Compton unfolded plans for a new era for the Institute which now faces the problem of providing educational and certain housing facilities for the unprecedented numbers of students who will study at M.I.T. in the next few years. That student housing has become a major administrative problem becomes evident when it is realized that most of the veterans who will study at the Institute



Left to right at the Ladies Table are: Mrs. L. F. Hamilton, Mrs. A. C. Cope, Mrs. Henry A. White, Mrs. George R. Harrison, Mrs. A. Warren Norton, Mrs. Norman J. Padelford, Mrs. Harold Bugbee, and Miss Julia Comstock.

are married men, many of them with families. The administration has already established Westgate Village which houses 100 married couples, and 500 additional students will be cared for in a temporary building erected during the war to house some activities of the Radiation Laboratory. Although such facilities will not provide the ultimate in desirable living, they will do much to relieve the already exceedingly congested residential areas in Cambridge. A new dormitory on Memorial Drive to house 200 students is among the eight new structures which have been approved for construction at an early date. Other buildings bearing top priority include a new library, a gymnasium, and five laboratories. Dr. Comp-ton's address follows:

This is the first annual June banquet of the M.I.T. Alumni Association since the close of World War II. The role of the alumni, staff, and students of this institution in the war is well known and received high acclaim. There is no need for further recounting of past achievements. It is far more fitting that we now look ahead into the new era before us, and this large and enthusiastic alumni gathering may well mark the date from which we shall measure our achievements in the future.

In building for the future we have the firm foundations of the past. The basic objectives of the Institute, as set forth in its charter, are as important today as they were when this institution was founded almost exactly eighty-five years ago. These objectives of education, research, and cooperation with great technological interests of our country have not only stood the test of time, but the general development of our civilization has made them ever more important. Internally the institution is sound and vigorous; externally its reputation is high. We should therefore face the future with confidence and a virile ambition for still further improvement and achievement.

In my remarks to you, therefore, I shall briefly sketch some of our plans for this improvement and some of our ambitions which seem possible of attainment.

These plans naturally involve students, staff, programs of education and research, and facilities to implement these programs. Let me therefore divide my remarks under these headings.

Students

NO action of the Institute in recent decades has been more significant or more satisfactory than the adoption of the plan of stabilization of enrollment at levels deemed most advantageous for the over-all educational program, combined with the development of more skillful methods for the selection of students with fine cooperation of our group of approximately 200 Honorary Secretaries distributed in important centers all over the world. While subject to continual search for still further improvement, these procedures have proven so satisfactory that they will undoubtedly continue in operation.

Greatly increased pressure for admission of new students, and the fact that we were able during the war to make some significant additions to the permanent educational plant, have led us to increase our enrollment from about 3,050 to about 3,550 as a stabilized figure for the foreseeable future. During the emergency created by the return of veterans, however, we are admitting up to the maximum possible crowded capacity of 4,500, and this crowded condition may last for three or four years. This emergency increase in enrollment is done at a slight sacrifice in educational effectiveness, but at a very great sacrifice in convenience and in many features which promote long term effectiveness. These sacrifices are an unavoidable result of the war and are certainly justified. This suddenly increased enrollment creates many problems of housing, scheduling, and wholesome student life.

Our greatest deficiency, and hence our greatest problem and opportunity, in the handling of students, has to do with those environmental features which constitute what is generally called "student life." While some of our recreational facilities are excellent, notably the swimming pool, the sailing pavilion and its fleet of dinghies, and the track and track house, other recreational facilities, such as a gymnasium and tennis courts, are sadly inadequate. We have no little theatre or auditorium suitable for the student dramatic and musical clubs, which now carry on under handicaps only because so many students are enthusiastic about such avocational activities. The social facilities provided by the Walker Memorial are very inadequate.



During the informal luncheon the 25-year class had a special reunion table with sunshine and cafeteria service . . .

Counterclockwise from opening at the table seating early Technology graduates are S. S. Dearborn, '84, W. L. Puffer, '84, A. T. Chase, '86, F. E. Ellis, '88, S. E. Thompson, '88, Mildred Allen, '22, C. F. Allen, '72, G. W. Kittredge, '77, and F. F. Tripp, '87.



There is something more basic than these particular examples. Quite properly, in an institution like M.I.T., first consideration should be given to the efficiency and excellency of performance of its main objectives, — education and research. The slogan, "Technology is a place for men to work and not for boys to play," is wholesome and has much to commend it. It remains true, however, that much can be done rather incidentally, through cultural environment and provision of opportunities for extra-curricular activities, to develop those attitudes and traits of personality which are extremely important in molding an individual who will be successful and happy as a member of society. We need to give increased attention to these matters.

Staff

TURNING next to the subject of staff, my comments can be very brief and to the point. Taken either as a whole, or department by department, I can say with pride and good conscience that they are unexcelled anywhere in the world in professional competence, reputation, loyalty, cooperation, and industry. I know of no member of the staff who is not enthusiastic about his work and about his colleagues. It is a great joy to work in such an atmosphere. The deans, department heads, and departments as a whole, have been unremitting in their efforts to secure and to maintain staff of the highest caliber.

There are, however, two problems of staff which urgently demand attention. The first is that the staff is seriously overburdened and has been for a number of years. This is due in part to the limitations of budget, in part to the professional enthusiasm of the staff members themselves to undertake more and more work in their fields of interest, and in part to the frequently overwhelming demands on them to perform all kinds of good deeds for government, industry, or community.

The second, and even more urgent, problem is that of the general salary scale, all the way from the highest to the lowest staff grades and including the employees in the offices, shops and other services necessary to the operation of the Institute. In proportion to its prominence and the standing of its faculty, M.I.T. salaries have always been low. The problem is greatly accentuated at the present time by the increasing cost of living and by the increasing wage scales generally throughout industry. In common with other educational institutions, we are faced now with a real post-war emergency. Expressed baldly, the Institute needs more income. Unless this is secured, the finest of educational plans and plants cannot maintain its effectiveness or permit the successful handling of some of the fine opportunities which we see ahead. This problem should be the concern of every alumnus and every friend of M.I.T., and I personally ask for every help which can be given to meet it.

Programs of Education and Research

PROGRAMS of education and research are under such continual review that there are always many new things to report. Of necessity, however, I shall confine my remarks to three major trends which are beginning to play a very large role in our operations.

The first of these is the development of centers of research which coordinate the cooperative activities of various departments in certain very important fields of overlapping interest. While we call them centers of research because research is their predominant role, they are nevertheless destined to play a very important role in our educational program, especially at the senior and graduate student levels. Their influence will also filter back into the cooperating departments to enliven and modernize their programs in the direction of the very latest technological developments.

These centers of research appear to be a highly satisfactory answer to a problem which has long confronted us and other institutions, namely, that of handling those interests which reach outside the traditional departmental boundary lines and require the cooperation of the specialists and points of view of various departments. Certain institutions have tried to meet this problem by setting up special institutes; others have set up new departments. Both of these solutions seem to us to be weak in one important element, namely, the mobilizing of the interested personnel in various departments into a cooperative effort, while still recognizing each department's special interest in various aspects of the program.



... whereas the 50-year class was accorded the honor of President Compton's presence, table service, and canopied shelter.



(Left to right) Just arriving at the speakers' table are: C. E. Locke, '96, Secretary of the Alumni Association, William L. Campbell, '15, Alumni Day Chairman, Parke D. Appel, '22, Banquet Committee (partly hidden), Henry A. White, symposium speaker, Paul W. Litchfield, '96, banquet speaker, A. Warren Norton, '21, President of the Alumni Association, receiving instructions on operation of public address system from technician, R. F. Haffenreffer, '95, President, Technology Club of Fall River (behind microphone), G. R. Harrison, symposium chairman, Norman J. Padelford, symposium speaker, Dr. George W. Morse, Medical Director at the Institute and recipient of honorary membership in the Alumni Association, Harold Bugbee, President-Elect of the Alumni Association, and C. A. Clarke, '21, Assistant Secretary, 25-year class.

The Research Laboratory of Nuclear Science and Engineering represents an even wider distribution of interest, since it involves the Departments of Physics, Chemistry, Electrical Engineering, Metallurgy, Mechanical Engineering, Chemical Engineering, Biology, and probably others to lesser degree.

Both of these research centers are outgrowths of the great interest and increased tempo of research resulting from the war. Both are supported by very large funds provided by government, industry, and M.I.T. Both provide facilities for any member of the staff of the Institute who has a worth while problem in these fields. Both have, in addition, a staff of administrative officers, research associates, assistants and the necessary shop services. Both will offer very great opportunities to advanced students and staff.

The Center of Analysis for the development and use of a wide variety of automatic computing machines is the oldest of these centers of research. In a somewhat similar category, and more recent, are the Spectroscopy Laboratory, the Acoustics Laboratory, the Instrumentation Laboratory, the Servomechanisms Laboratory, the Committee on Applied Mathematics, the Laboratory for Insulation Research, the Industrial Relations Section, and the Research Center for Group Dynamics. To a greater or lesser extent these and others are tending to become specialty and coordination centers for methods or equipment which have a wide range of application. I look for this type of organization to become increasingly important as technology becomes ever more complex and artificial boundaries between the sciences break down.

A second major new development in our programs of education and research is the greatly increased degree of interest and coöperation of industry and of the War and Navy Departments. The work sponsored here by these outside agencies during the coming year involves a sum at least equal to the largest pre-war operating budget of the entire Institute. On the industrial side the contributions of a group of companies interested in food technology to our newly established Food Technology Department, and of a group of electrical, machine tool and aeronautical companies to our new program in gas turbine engineering are notable.

We are working on substantial contracts from the Bureau of Ordnance of the War Department and the Office of Research and Inventions of the Navy Department. These contracts can be wholly justified on an educational basis and also on the basis of real advancement of fundamental science and engineering art.

We believe that this type of program, which brings to the Armed Services the coöperation of educational institutions in solving their problems and in training personnel to increase the national strength in important fields, is wise and should receive every encouragement and support. We are coöperating with

the Army and Navy in this effort whole-heartedly, although we have been forced to limit the number and magnitude of the projects which we could thus undertake in view of the limited capacities of our staff and facilities which are also urgently needed for the education of the abnormally large number of students.

The third feature of our educational program has to do with the greatly increased number of post-graduate students coming from the Army and Navy for training in certain specialties. For a great many years we have handled the post-graduate education of the naval constructors and, more recently, the combined program for naval constructors and naval engineers under the Bureau of Ships, through an arrangement with the Post-graduate School at Annapolis. In addition to this, before the war we had a few special military students coming to study such subjects as torpedo design or fire control. Now, however, and again as a result of the recent war experience, both Services are sending greatly increased numbers of selected young officers for post-graduate study in educational institutions. In fact, about one-third of our total post-graduate enrollment of more than 1,000 graduate students during the coming year will be composed of young Army or Navy officers. The demands on us for such educational assistance to Army and Navy have been heavy and well reasoned, and we have had to limit the number admitted only because of the importance of retaining an appropriate share of opportunity for civilian graduate students to be trained for professional careers in industry or education.

With this brief discussion of only three of the new aspects of our program of education and research, I pass on to discuss new facilities for implementing these programs.

New Facilities

PERHAPS you will find these to be the most interesting of our plans for the future, — interesting because of their specific and visible character.

At the alumni dinner last February I described our new building program and will not again go into detail at this time except to refresh your minds by mentioning the various items. Eight new permanent buildings have been approved by the Executive Committee and their construction given top priority. For some of them the funds are completely in hand and we are only awaiting completion of architect's plans to proceed with construction. For others the funds are partly in hand or the possibility of funds is at least in sight, so that we are also proceeding with the plans for them, in the hope that the financing may be complete by the time construction could begin. In all we need still some four million dollars to finance all items of this ten million-dollar program. (Continued on page 602)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Advancement

APPPOINTMENT of Professor Thomas K. Sherwood, '24, as Dean of the School of Engineering has been announced by President Karl T. Compton. Professor Sherwood has been Deputy Dean of Engineering since last February as well as Professor of Chemical Engineering.

Professor Sherwood succeeds Dean Edward L. Moreland, '07, holder of the post since 1938, who asked to be released so that he might return part time to the Boston firm of consulting engineers, Jackson and Moreland, from which he has been on leave during the war years. Dean Moreland will continue at the Institute as Executive Vice-president, and in this part-time capacity he will act as consultant to the President and Vice-president on matters affecting Institute relations with government, on the coordination of sponsored research among the several departments and schools, and on the planning and provision of new facilities and revision of existing space required by the Institute's enlarged program of research and education.

"Dean Sherwood," said President Compton, "brings to this major administrative post at the Institute an exceptional combination of experience as a successful teacher, consulting engineer, and director of research. During the war he carried through a variety of important assignments for the Office of Scientific Research and Development which demonstrated his successful coupling of practical engineering with a fundamental scientific point of view."

As recorded in the March 1946 issue of *The Review*, which contains additional data on his career, Professor Sherwood was appointed Deputy Dean of Engineering in February.

Emeriti

SEVEN members of the instructing staff who have served the Institute as teachers for periods ranging from 19 to 48 years, will retire on July 1. The group includes Professor Charles B. Breed, '97, former Head of the Department of Civil and Sanitary Engineering; Robert S. Williams, '02, Head of the Department of Metallurgy, who acted as Deputy Dean of Engineering during the war; George W. Swett, '03, Professor of Machine Design and for many years secretary of the faculty; Carle R. Hayward, '04, Professor of Process Metallurgy; Matthew R. Copithorne, Associate Professor of English; and Johan Selmer-Larsen, lecturer on modeling in the School of Architecture and Planning. Robert C. Eddy, of the Division of Industrial Cooperation will also retire on July 1st.

Professor Williams, while retiring from active teaching duties, will continue to serve as Dean of Army and Navy students. He will have the rank of professor emeritus and honorary lecturer, as will Professors Swett, Hayward

and Copithorne. Professor Breed retires with the rank of professor emeritus.

Professor Breed has been a member of the staff of the Institute for 48 years. He was appointed an assistant in civil engineering in 1898, a year after his graduation from the Institute, becoming a full professor in 1914, and was head of his department from 1934 until he relinquished that post in 1944. Professor Breed is a native of Lynn where he was born in 1875. He has been an advisor on construction and economic problems for a number of the country's leading railroad systems, as well as consultant for various state public service and public works departments. In 1939 Professor Breed, in association with two other engineers, completed a two-year study of highway costs for the Association of American Railroads. During World War I he taught navigation and aerial observation in the U. S. Army School of Military Aeronautics, later serving as president of the academic board of that school. In the recent war he was confidential advisor on transportation to the Army and to several railroads. He is widely known for his textbooks on engineering subjects.

Joining its staff in 1902, the year of his graduation, Professor Williams has been associated with the Institute for 44 years. He has served continuously since then except for two years when he went to Germany for advanced study at Göttingen. Upon his return to this country in 1907 he became an instructor in the Department of Chemistry. In 1924 he was appointed professor of analytical chemistry and metallurgy and three years later he was made head of the course in physical metallurgy. In 1937 he became head of the department of metallurgy, and from 1942 to 1945 he was on leave-of-absence from his department to serve as Deputy Dean of Engineering. He is widely known among students as the author with Professor V. O. Homerberg of the "Principles of Metallography."

Professor Swett, who is an authority on machine design, has long been secretary of the Institute's faculty and is widely known in engineering and educational circles. In addition to his duties on the Institute's staff, he has been a member since 1903 of the staff of the Lowell Institute School. Early in his academic career he was the first head of the mechanical engineering department of Northeastern University. He is a native of Troy, N. Y., and was graduated from the Cambridge Manual Training School, now Rindge Technical School, in 1899 when he entered the Institute from which he was graduated in 1903. He joined the Institute's staff in the same year and was promoted to professor in 1929.

Professor Hayward is a recognized authority on process metallurgy and has studied and written extensively in his field, particularly on copper, lead, and zinc. He has long been sought as a consultant in this field and assisted in developing the present process for producing oxygen-free copper. A native of Yankton, S. D., Professor Hayward was graduated from M.I.T. in 1904 and for two years was an instructor in science at Bellows Free Academy in

Fairfax, Vt., before joining the Institute's instructing staff. He has written and translated a number of books in his field and is the author of many technical papers on metallurgy. Professor Hayward is a former member of the Quincy City Council and has long been active in the work of the Y.M.C.A.

Professor Copithorne, a native of Cambridge, was graduated from Harvard University in 1912 and joined the Institute's staff in 1918 as an instructor in the Department of English and History. Popular among his students for many years, Professor Copithorne is widely known as a lecturer on prose and poetry.

Colonel Eddy is a former head of the Department of Military Science and Tactics at the Institute and a graduate of the U. S. Military Academy at West Point in the class of 1905. He is an honor graduate of the Coast Artillery School at Fort Monroe and in 1923 was graduated from the Command and Staff School at Fort Leavenworth. During World War I he served as a member of the artillery defense staff at Panama and in 1918 was ordered to Washington to take charge of the organization and training of heavy artillery units for overseas service. Upon his retirement from the Army, Colonel Eddy joined the staff of the Institute and served for several years in the department of business and engineering administration. In recent years he has held an executive post in the Division of Industrial Cooperation.

Mr. Larsen is widely known in New England as an instructor in modeling. He was educated in the Royal School of Art in Christiania, now Oslo, Norway, where he studied from 1902 to 1905. He joined the staff of the Institute's School of Architecture and Planning in 1922. Previous to that time he had been an instructor in the South Boston School of Art in 1912, the Cambridge School of Art from 1914 to 1916, and the Worcester Art School in 1921.

Cultural Exhibits

THE fruition of an ambitious plan for temporary exhibitions has taken place in the Institute's first post-war year. These shows represent one of the two facets of the present museum policy of M.I.T.

Under this plan, the staff of the Museum will continue to develop more interesting and complete permanent technological displays in spaces appropriate for such presentations. At the same time, it is recognized that permanent exhibits are of greatest interest to the occasional visitor, for members of the Institute family might be expected to develop blind spots to long-standing material, and hence a program for temporary exhibits is also under way.

The second and possibly more important part of the plan calls, therefore, for an increasingly vigorous display of a series of temporary and general nontechnological shows of approximately three weeks' duration and changed at intervals of about a month. These temporary exhibits are expected to add to the interest and variety of Institute life and, at the same time, to stimulate a group of observers, however small, to an increased interest in some facet of current culture. Thus they are to serve as an extracurricular adjunct to the formal program of the Division of Humanities.

It is no part of the plans of the sponsors that all of these shows shall please everybody; indeed, they are certain not to if they are well contrived, for only the most tasteless of viands can have the faculty of displeasing no one. It is not even a part of the expectation that they shall at times be able to escape the allegation of being propaganda, for it is hoped that the displays will have some influence on those who view them. The standards set are such that, in every case, the quality of the display shall be as good as can be produced today, and this quality is to be measured in terms of the material selected as well as in the manner in which it is shown.

It is expected that eventually the shows will be exhibited in a room especially designed for the purpose in the new library, but it is felt wise not to defer beginning this program until the completion of the new building. For the time being, therefore, the exhibitions have been placed in the lobbies of either Building 7 or Building 10. In its own way, each of these exhibition places has proved to be a remarkably effective show place. Each has the advantage, over any other Institute display space, that almost everyone passing through the Institute has to pass by the exhibitions — and few pass without stopping to



Of the temporary exhibits shown at the Institute during the past year, that on examples of modern advertising art caused most comment. Shown here is a portion of the exhibit which was on display during April in the Rogers Building. Art students from Boston and Cambridge were frequent visitors to this exhibition.

examine. Consequently, it is probable that these lobbies will continue to be used from time to time even after the new room is ready.

For a long time, of course, the Museum committee has sponsored traveling exhibitions, but on a very limited budget. This year the budget has been substantially augmented, and the committee has a new chairman in Professor Howard R. Bartlett, Head of the Department of English and History. Professor Herbert L. Beckwith, '26, who has returned to the Department of Architecture and Planning after his wartime leave, has been appointed director of exhibits, reporting to the director of libraries, who is administratively responsible for the entire program. The combination of increased funds and of skilled talent in the art of exhibitions has made for a richness never before achieved at the Institute.

The season opened on November 11 with a showing of dramatic photographs collected by the Navy during the war under the leadership of Edward Steichen. This show, "Power in the Pacific," opened simultaneously with the Institute's "Victory in Science" exhibit (described in the December issue of *The Review*), both of which were set up by Professor Beckwith. The group of Navy photographs was followed by an exhibition of stage designs, loaned by the Museum of Modern Art of New York, and by a collection of illustrations portraying industry and culture in India, provided by the British Ministry of Information.

Beginning in February there was a series of notable exhibits, each of them a first (and most of them the only) showing in Boston, as had also been the case for "Power in the Pacific." The first of this series was an exhibition of maps prepared by the Hydrographic Office of the Navy during the war, which had been shown previously only in the Library of Congress. This exhibit was opened with a gallery talk by Guillermo Medina, principal engineer of the Hydrographic Office.

A colorful exhibition of painting on the general theme "Oil, 1940-1945" by the more conventional group of modern American painters was shown early in March. These paintings were executed, upon commission of the Standard Oil Company of New Jersey, by such well-known artists as Joe Jones, Frederic Taubes, Howard

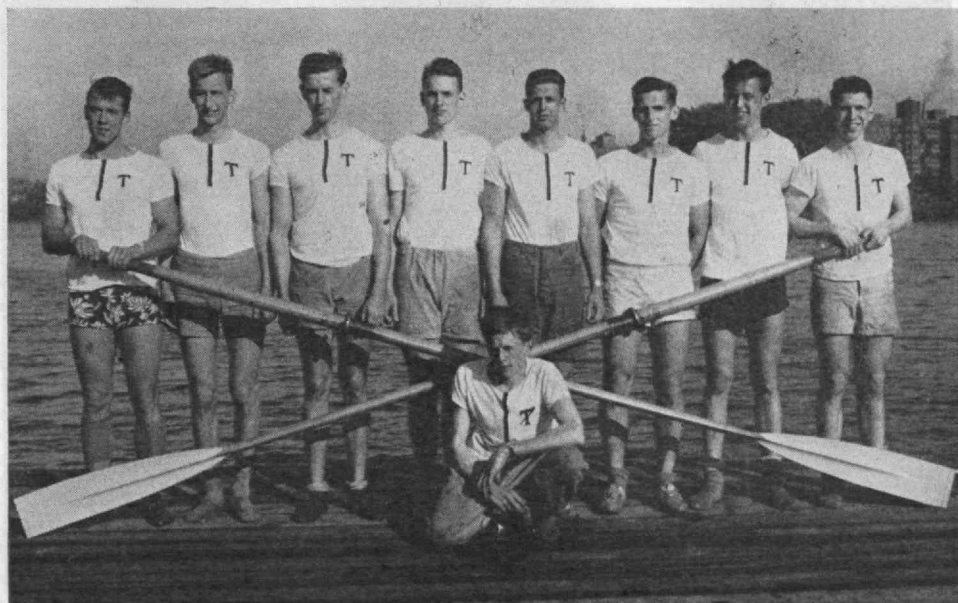
Baer, Adolph Dehn, Ernest Fiene, and Laurence Beall Smith. They had been shown previously only at the New York opening at the offices of the Standard Oil Company of New Jersey and from their showing at the Institute immediately were sent on national tour.

In April, pictures painted for the Container Corporation brought to the Institute examples of modern advertising art. This group of paintings was the work of such important artists as A. M. Cassandre, Fernand Leger, Herbert Bayer, Jean Hélion, and Gyorgy Kepes, who has but recently joined the Institute's staff in the Department of Architecture and Planning. Although this exhibit appealed less to the Institute public than some of the other exhibits, it attracted widespread interest in Cambridge and Boston. Several thousand visitors came to see this exhibit during its four-week run, and the 1,500 printed catalogues proved entirely inadequate for the demand. This exhibit of advertising art was used regularly as a point of study for groups of students from the art schools in Boston.

Between these two exhibitions of paintings was one of photographs of modern American architecture, entitled "Built in U. S. A." This exhibit, assembled by the Museum of Modern Art, was undoubtedly the most popular with Institute staff and students.

At the year's end, the final show was the most original of all. It displayed textiles as examples of art and science and was the result of a collection by Edward R. Schwarz, '23, Professor of Textile Technology, and his colleagues, with Anni Albers, distinguished artist and textile designer from Black Mountain College in North Carolina. Experimental textiles were shown along with pragmatic ones, including some from Professor Schwarz's collection of Peruvian pieces. The specimens were assembled directly from the designers, and every important designer in America contributed, including such well-known persons as Dorothy Liebes and Henning Watterston of San Francisco, Marianne Strengell and Robert Sailors of the Cranbrook Academy of Art in Bloomfield Hills, Mich., Marli Ehrman of the Institute of Design in Chicago, Else Regensteiner of the Art Institute in Chicago, and Anni Albers. This was a show originated at the Institute and one which will not be duplicated elsewhere.

On June 16 the M.I.T. varsity crew left Cambridge by plane for Seattle where leading crews of the country took part in the invitation regatta on Lake Washington on June 22. Members of the crew are, from left to right, John Banks, Paul Gerhardt, Albert E. Bowen, Jr., John E. Taft, captain, John R. Saxe, James Robertson, George Colville, and Robert L. Silberman. In front of crossed oars is John W. Leonard, coxswain. The M.I.T. crew came in second.



Corrosion Study

CORROSION of metals, cause of one of the world's greatest economic losses, will be studied in a co-ordinated program of instruction and research at the Institute, President Compton announced on June 14, with the appointment of Herbert H. Uhlig, '32, as an associate professor in the Department of Metallurgy to take active charge of the project.

In order to consolidate the attack on this major problem, which causes estimated losses amounting to several billion dollars annually, Dr. Uhlig will cooperate closely with all departments of the Institute concerned with corrosion. The subject has been under investigation at M.I.T. for many years and important work has been done by the Departments of Metallurgy, Chemical Engineering, and Chemistry. Organization of the corrosion program as a project on which the resources of all departments will be brought to bear is expected to expedite the search for methods of preventing or controlling corrosion. In the oil industry alone it is conservatively estimated that losses from corrosion amount to approximately \$125,000,000 a year in refineries and \$50,000,000 in pipe lines.

Studies of corrosion began at Technology with the notable work of Willis R. Whitney, '90, and William H. Walker in the early years of the present century. This was followed by important contributions by Professor Walter G. Whitman, '17, head of the Department of Chemical Engineering, and his associates, in the early 1920's. In the years that have followed, corrosion has been studied almost continuously.

Professor Uhlig graduated from Brown University in 1929 and completed his work for the doctorate at M.I.T. in 1932. After a year as physical chemist at the Rockefeller Institute he went to Lever Brothers as research chemist and became assistant chief chemist in 1937. He then joined the M.I.T. research staff to take charge of a project dealing with the corrosion of stainless steel. Later he was called to the Research Laboratory of the General

Electric Company where he has been engaged in research on corrosion and allied problems. He has published a number of papers on corrosion and is editor-in-chief of "The Corrosion Handbook" to be published shortly.

Professor Uhlig, who joins the Institute's staff on July 1, is planning a fundamental research program with the study of the nature of metals and metal surfaces as its main objective. The problem will be attacked largely from the electrochemical viewpoint and is expected to lead to a more logical approach to the selection of corrosion resistant metals and to methods of production.

Laboratory of Mechanical Metallurgy

EXPANSION of its facilities for instruction and research in the field of engineering materials and establishment of a laboratory of mechanical metallurgy has been announced by President Compton.

Present facilities developed in this field by the Department of Mechanical Engineering will be transferred to the new center, which will be administered by the Department of Metallurgy. Dr. Compton also announced the promotion of Dr. John Wulff, Associate Professor of Metallurgy, to the rank of professor and the appointment of Howard F. Taylor as Associate Professor of Mechanical Metallurgy.

The new laboratory will be under the active supervision of Professor Wulff, and his staff will include Professors Edward L. Bartholomew and Frederick R. Evans, and Malcolm S. Burton, instructor. Cooperation in teaching and research will be actively maintained between the Departments of Metallurgy and Mechanical Engineering.

Professor Wulff will have the counsel of an inter-departmental committee composed of Professor C. Richard Soderberg, '20, of the Department of Mechanical Engineering and Professor John Chipman, head of the Department of Metallurgy.

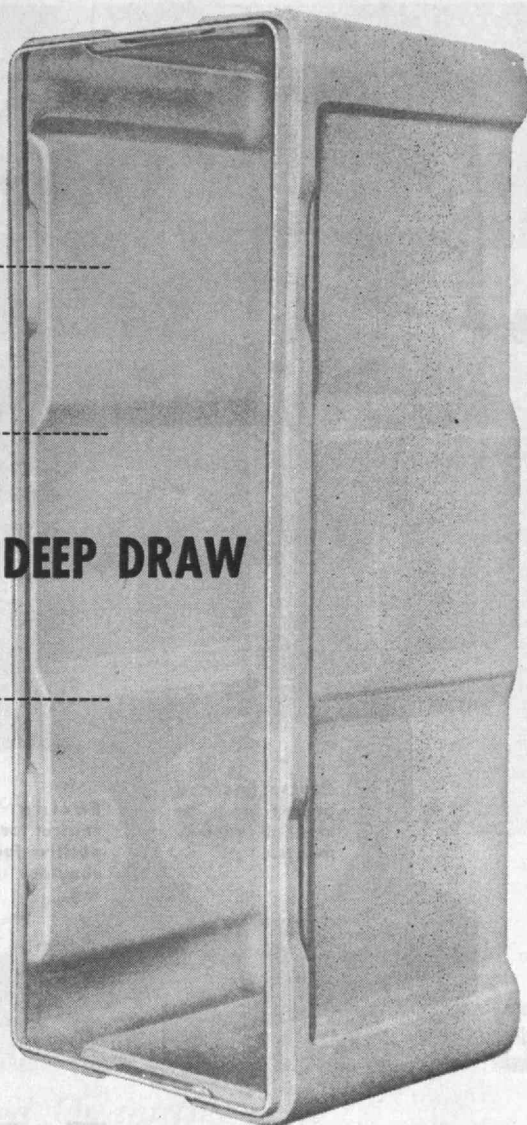
In announcing the new center, Dr. Compton said that "the requirements of the gov- (Concluded on page 582)



For services rendered to the nation during the recent war, A. Warren Norton, '21, President of the Alumni Association was awarded a certificate of appreciation from the War Department at ceremonies in his office on June 12. The presentation was made by Major General Harry C. Ingles, Chief Signal Officer (left) and Colonel Jay D. B. Lattin of the Signal Corps.



FINAL, ACCURATE DIMENSIONS IN **1** DEEP DRAW



REVERE MAGNESIUM ALLOYS

You can do more with magnesium in one deep draw than with any other engineering metal. You can draw it deeper in one stroke of the press, and far closer to the precise dimensions on your prints. For magnesium alloy sheet is deep drawn at a temperature above its recrystallization point so that the ductility of the metal is at a maximum.

From this you gain five important advantages . . .

1. You can effect greater deformation without danger of fracture. Reductions up to 65% in one operation are common.
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3. Time and money are saved through elimination of interstage annealing and multiple press operations.
4. Tool costs are materially reduced because no interstage dies are needed.
5. Springback may be eliminated, so that the part can be drawn to a final fit in one stroke.

Consider what this can mean in terms of production speed and economy. Then add to that the outstanding feature of magnesium alloys—their feather-light weight, their extremely high ratio of strength to weight—and you see how better airplanes, better truck and bus bodies can be made at a substantial saving in the cost of time, labor and tools.

Revere light metal products include magnesium sheet and plate, rod and bar, tube, extruded shapes, and forgings in all standard wrought alloys, as well as aluminum alloy tube, extruded shapes and forgings. A Revere Technical Advisor will gladly consult with you about the application of these products to your business. Get in touch with Revere.

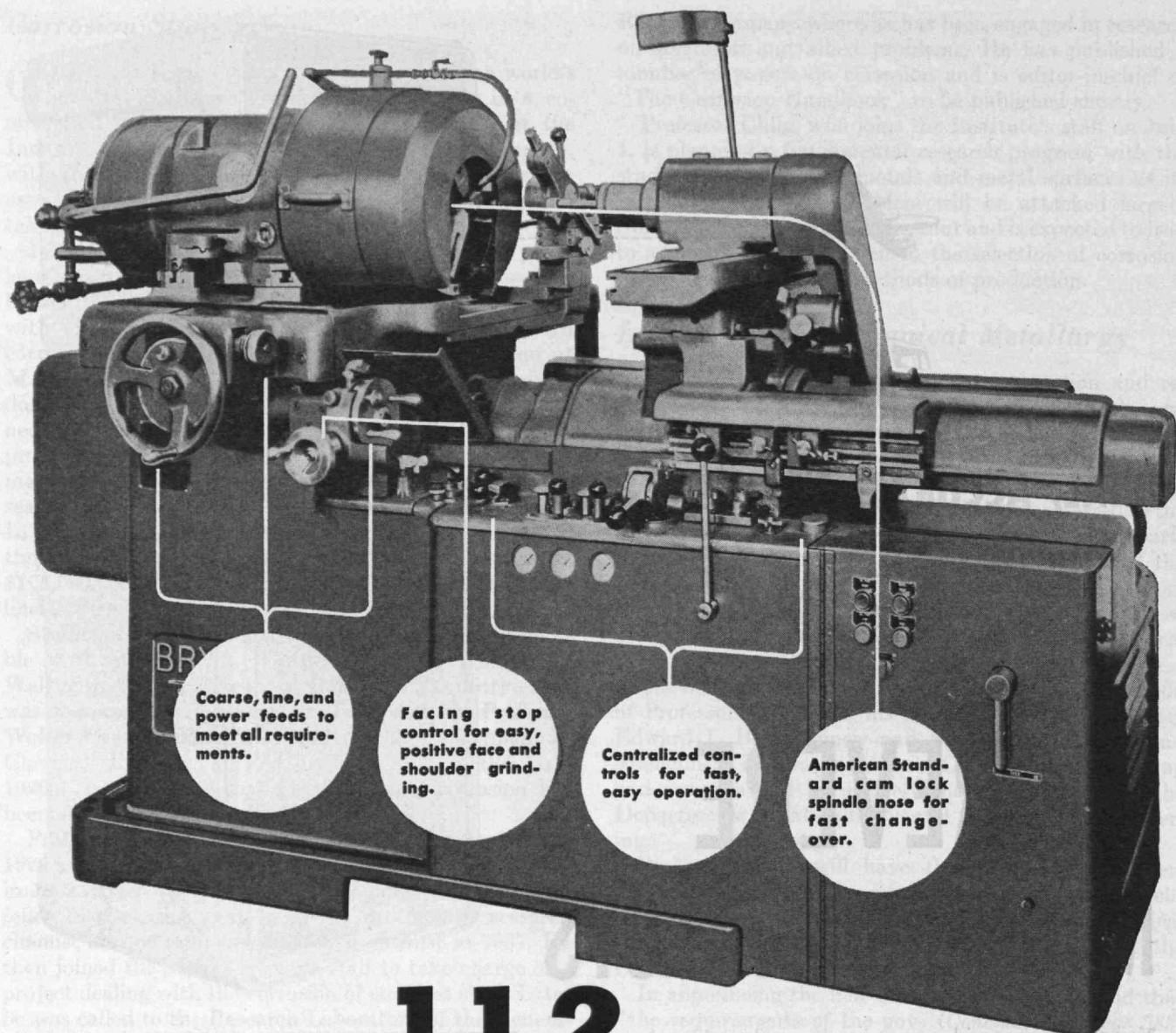
Weighing only 5 lbs., this box 29" long, 11" wide and 10 $\frac{1}{4}$ " deep was made of Revere magnesium alloy 0.081" sheet by Brooks and Perkins, manufacturing engineers, 2457 Woodward Avenue, Detroit, Mich. Produced in one draw on a 200-ton hydraulic press at a temperature of 550°F. An additional operation formed the shoulder at the top to receive the lid. Made to carry military rockets, these deep-drawn magnesium boxes suggest how readily magnesium can be used to lighten the weight of bus and truck body parts as well as numberless other products.

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Facing stop control for easy, positive face and shoulder grinding.

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American Standard cam lock spindle nose for fast change-over.

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An American Standard cam lock spindle nose allows fastest change of chucks and holding fixtures. All controls are centrally located so that all of the operator's motions are easy and natural—more work produced with less fatigue.

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BRYANT



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Good News!...



INTER-OFFICE MEMO

To: Harry A. Ehle, Vice-pres., Sales
Date: 4/20/46

Production capacity on all types and ranges of All-Metal Rheostats has now been increased to provide additional production for scheduling during last week of May and following months, as per your request of 2/20/46.

From: *O. J. Greenway*
Works Manager



All Metal RHEOSTATS

... Increased Quantities Now

Available on Short Delivery Cycle!

TYPE PR-25—25-watt rating. Temperature rise, 140°C. Standard resistance values, 1 ohm to 5,000 ohms. Diameter, 1 $\frac{1}{2}$ ". Depth behind panel, $\frac{3}{16}$ ".

TYPE PR-50—50-watt rating. Temperature rise, 170°C. Standard resistance values, 0.5 ohm to 10,000 ohms. Diameter, 2 $\frac{3}{16}$ ". Depth behind panel, $\frac{1}{8}$ ".

TYPE PRT-25—(AN3155-25). 25-watt rating. Fulfills AN3155 specifications. Totally enclosed. Heat-radiating black finish. Rear terminals. Standard values, 10 ohms to 200 ohms. To 5,000 ohms on special order. Temp. rise, 140°C.

TYPE PRT-50—(AN3155-50). 50-watt rating. Same construction as PRT-25, to AN3155 specifications. Standard values, 5 ohms to 200 ohms. To 10,000 ohms on special order. Temp. rise, 170°C.

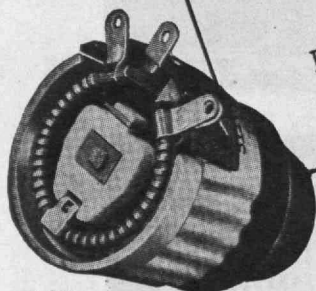
All IRC Rheostats operate at about half the temperature rise of equivalent units and can be operated at full load on as little as 25% of the winding with only a slight increase in temperature rise.



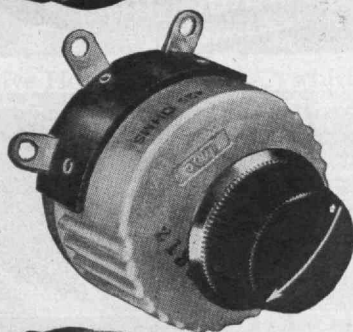
INTERNATIONAL RESISTANCE CO.

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PR-25



PR-50



PRT
(AN3155)

CONTACT YOUR IRC REPRESENTATIVE
FOR COMPLETE DETAILS

Why TAFT-PEIRCE

keeps Growing UP

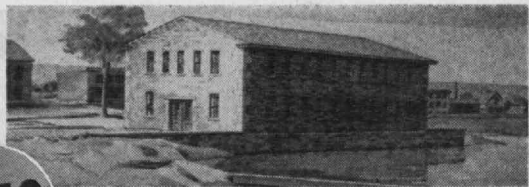
... yet

Never Grows Old

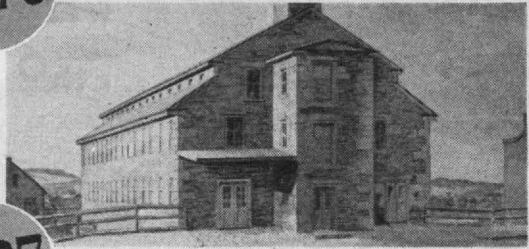
Primary reason is that there is no deadening monotony, no rut in work or outlook, in the daily operations at Taft-Peirce. Here, the horizon embraces all industry. Diversification, exploration, and original thinking are the prime movers of this business.

In the short span of 70 years, Taft-Peirce Contract Service has branched out from its original activity, the manufacture of sewing machines, into practically every field of production. Taft-Peirce developed, tooled, and built the first visible-platen typewriter, the first punched-card tabulating machine, the first Loughheed plane motor, and many another well-remembered first. Then, as time sped by, Taft-Peirce became toolmaker to the automobile, aviation, and countless other industries, producer of tools and equipment for the Army and Navy. Today, the plant houses over 400,000 square feet of space, and some 1500 modern machine tools.

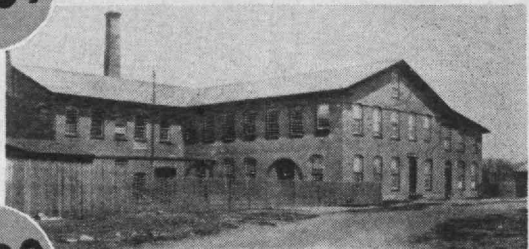
Through these resources, you can draw on a practical working knowledge of production problems ranging from food to fabrics, from machine tools to machine guns, from chemicals to communications. No job is too large, none is too small. If it would help *you* to unload some, or all, of your new-product problems on the shoulders of this young-minded, fast-moving organization, you are invited to write to The Taft-Peirce Mfg. Co., Woonsocket, R. I.



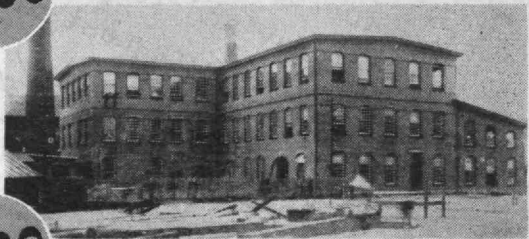
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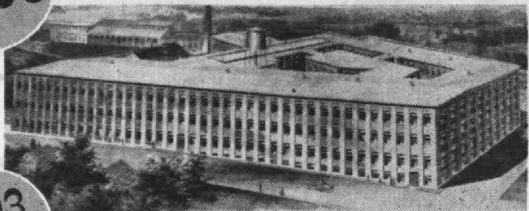
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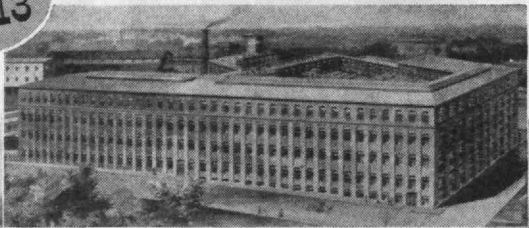
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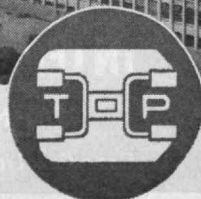
1896



1903
1913



1946

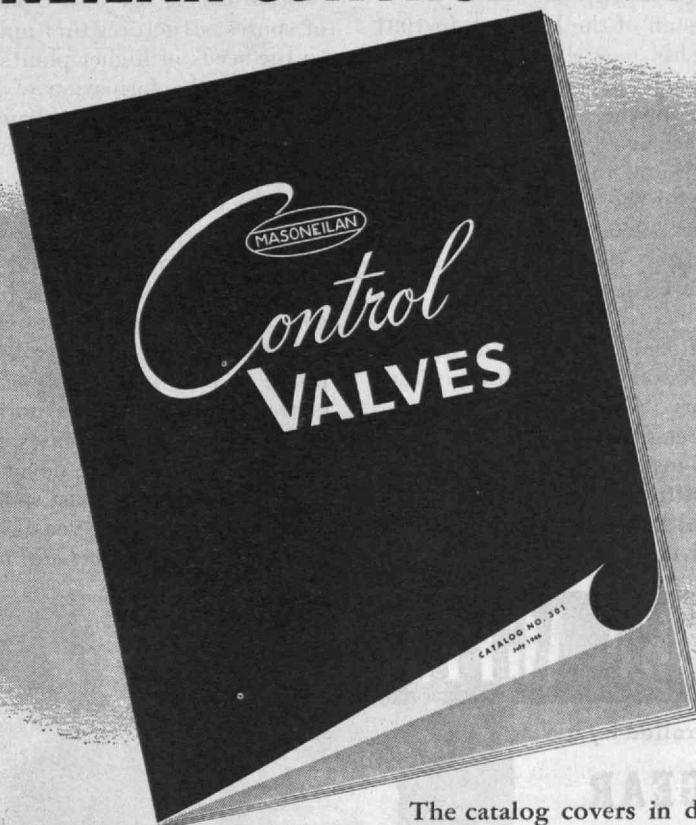


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THE INSTITUTE GAZETTE

(Concluded from page 576)

ernment services during the war for rapid, high-quality production of materials and devices demonstrated the need for a fundamental re-examination of material processing techniques such as casting, welding, brazing and forging. Research and development during the war revealed promising avenues for future research in a field of fundamental importance to almost every branch of industry."

Professor Wulff joined the staff of the Institute in 1931 as an instructor and until his new appointment was associate professor of metallurgy. He was awarded the degree of engineer of mines from the Colorado School of Mines in 1924, the master of science degree in metallurgy from Yale University in 1926, and the doctor of science degree in Physics in 1929 from the University of Tuebingen, Germany. From 1925-1926, he was a Sterling teaching fellow at Yale and from 1929-1931 a National Research fellow at the Universities of Tuebingen and Munich.

Professor Taylor has been at the Institute as a research associate since November 1945, on leave-of-absence from the Naval Research Laboratory. He received his bachelor of science degree in chemical engineering from Michigan State College in 1937 and his master of science degree in metallurgy from the same institution in 1938. Since June 1937 he has been at the Naval Research Laboratory and since 1939 head of the steel castings section.

THE TREND OF AFFAIRS

(Continued from page 552)

of parent yeasts, and then, after growing for a while, separate and become discrete individuals. Some yeast genera, such as the *Torulopsis* that received so much attention during the war because of the British program to cultivate *Torulopsis* yeasts as human food, are able to multiply only by budding. But the majority of the commercially useful yeasts, all members of the genus *Saccharomyces*, are also capable of multiplying by means of spores, structures that may be compared very roughly to the seeds of higher plants.

During the formation of spores in the *Saccharomyces* yeasts, the intracellular structures that are the vehicles of heredity, called "genes," divide into two sets, that may be designated arbitrarily as *A* and *B*. Each spore receives only one of these sets of genes, so that an individual spore carries either the *A* set or the *B* set, but never both. Spores may germinate and produce viable individuals, but since such individuals have only half of the normal complement of genes, they are not normal cells, but are instead a special phase called the "haplophase." Haplophase yeasts differ in appearance and in physiological characteristics from the normal yeasts from which they derive. Haplophase yeasts may continue to thrive by budding, but they are never capable of spore formation.

The usual fate of yeast spores is, however, not to germinate into haplophase yeasts but rather to recombine with

(Concluded on page 584)

It Pays to Be AGITATED...

When the Agitating is Controlled by a

WORM **WHS** GEAR SPEED REDUCER

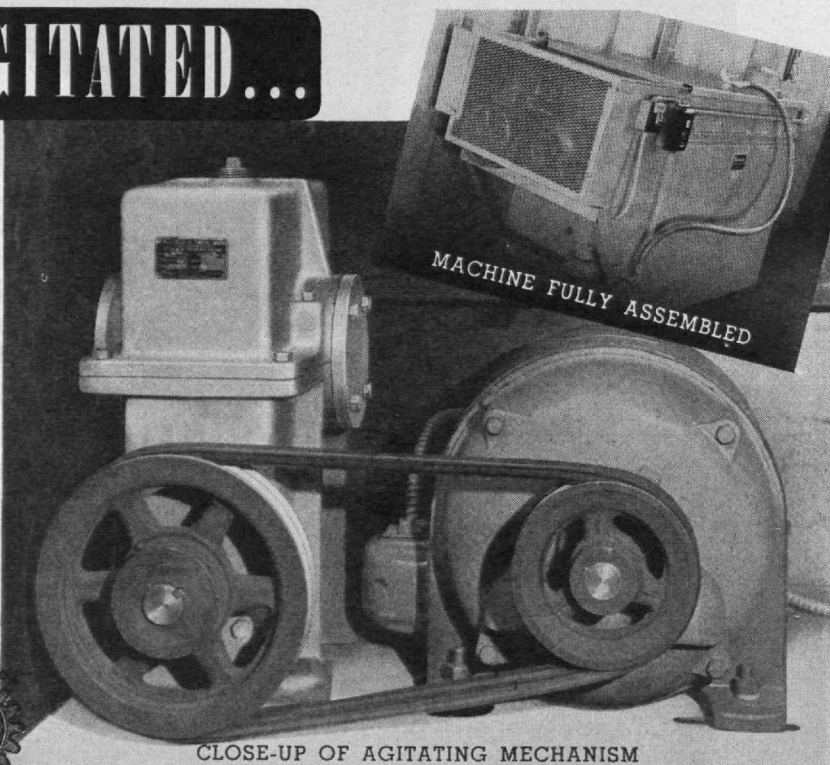
In this case, it pays the Magnus Chemical Company of Garwood, N. J., builders of the Magnus Agitating Metal Cleaning Machine (Model 4SF illustrated) to rely on the **dependability** of a WHS Speed Reducer driving a mechanism, the reciprocating action of which is developed by a chain passing over two sprockets to transmit the up and down motion through a system of shafts and levers to the four arms holding the grate platform.

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CLOSE-UP OF AGITATING MECHANISM



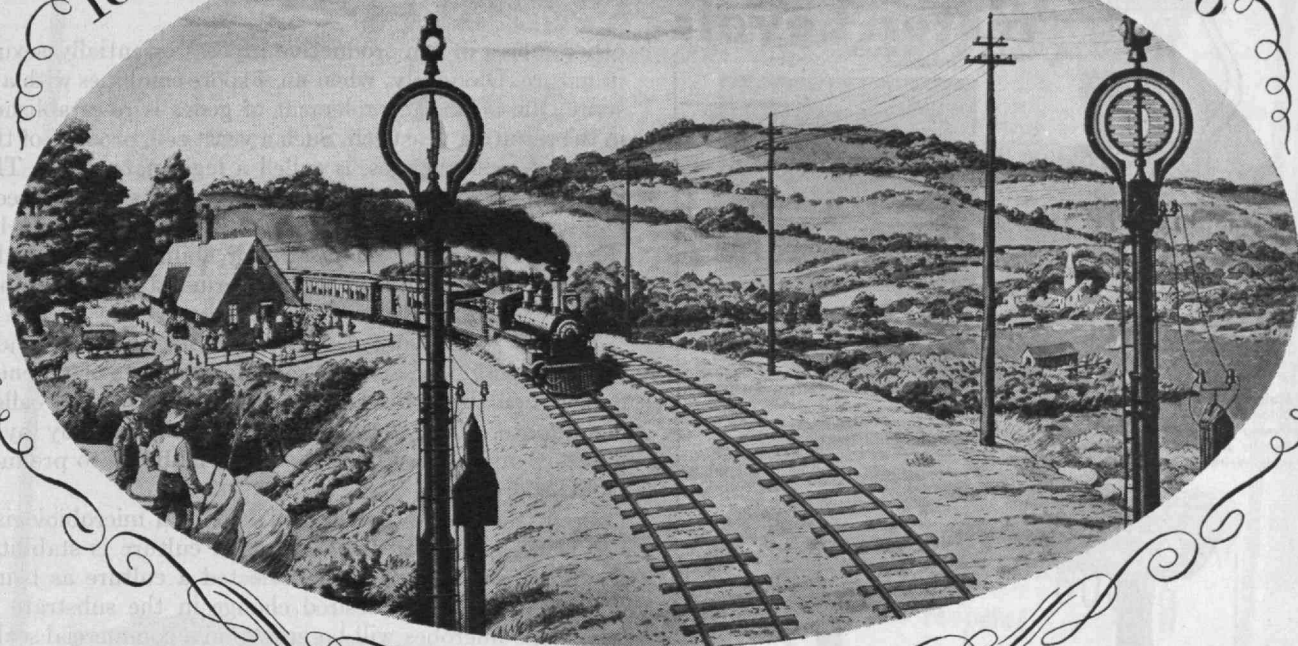
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GEORGE WESTINGHOUSE CENTENNIAL

1846

1946



Semaphores of Safety

Although world-famous as the inventor of the railway air brake, few people realize that George Westinghouse also pioneered the *first automatic block-signaling system* for railroads.

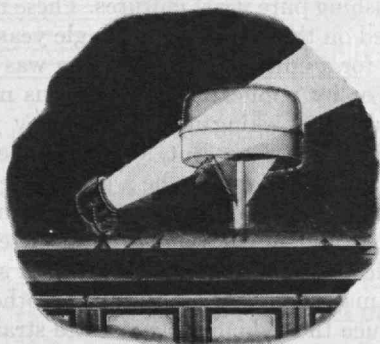
While developing the air brake, Westinghouse clearly foresaw the need for improved railway traffic controls—to meet the demand for *greater speed and safety* in our rapidly expanding transportation systems.

In those early days, switches and signals were moved by hand. But, in such manually controlled devices, too much depended on the human element.

A watchman might fall asleep—or become ill. Or some other mishap might break the human links in the chain and lead to disaster.

In 1881, George Westinghouse began to apply his brilliant inventive genius to the problem of power signaling and interlocking. As one scientist expressed it, "he used compressed air for the heavy work, electricity to pull the trigger."

And the same basic principles of railway signaling, developed by Westinghouse more than 50 years ago, *still serve in controlling our vast railroad networks of today!*



Westinghouse

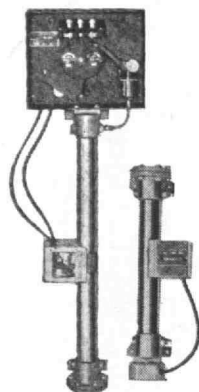
PLANTS IN 25 CITIES OFFICES EVERYWHERE

TODAY—The Westinghouse Electric Corporation is providing *semaphores of safety* in yet another field—marine transportation. Recently, Westinghouse engineers equipped an Old Bay Line steamship with a *radar navigational aid* . . . to guide it safely through fog and dark of night.

Now the S.S. "City of Richmond" makes its nightly run between Baltimore and Norfolk—*safely and free from delays* due to bad weather. Similar Westinghouse radar installations are now planned for use on inland waterway, coastal and ocean-going craft.

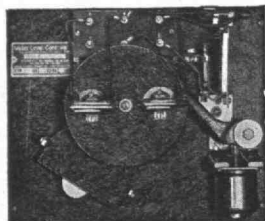
Tune in: TED MALONE—Monday, Wednesday, Friday, 11:45 am, EDT, American Network

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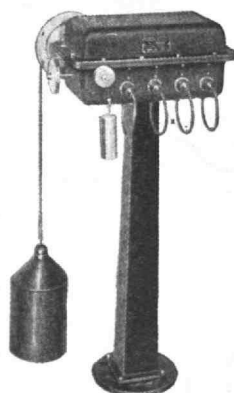
**TYPE PW & PWD
CONTROLS
for Hydro-Pneumatic
(Pressure) Tanks**

Maintains water level and air volume automatically—prevents tanks from becoming water-logged or air bound. Permits utilizing maximum capacity of tank. Write for Bulletin PW-6.



**TYPE "A" ROTO-TROL
Electric Surge Snubber
Ball Bearing Construction
Springless Mechanism**

Permits accurate dependable control of level in distantly located elevated tanks. Available for single or multi-pump control. Unlimited differential between high and low setting. Write for Bulletin R-4.



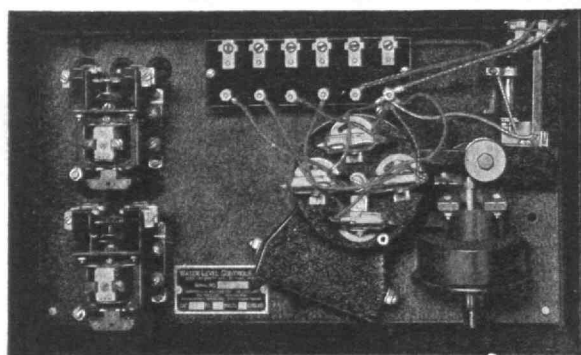
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PROGRAMMING
FLOAT CONTROL**

For complex control of multi-pump installation. Any desired number of starting and stopping positions for each pump. SPLASH PROOF CONSTRUCTION. MERCURY TUBE SWITCHES. Write for Bulletin 940.



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For control of any number of pumps, any sequence of operation. Moisture and corrosion proof construction. Indicating dial and pedestal for conduit connection optional. Write for Bulletin RF-2.



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(Pressure Type) for use with compression pipe suspended in sump. Time delay device prevents water-logging of pipe—no working parts in sump. Write for Bulletin RS-3.

MECHANICAL ALTO-TROL, provides automatic alternation of 2 pumps. ELECTRIC ALTO-TROL for 2, 3 or more pumps.

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THE TREND OF AFFAIRS

(Concluded from page 582)

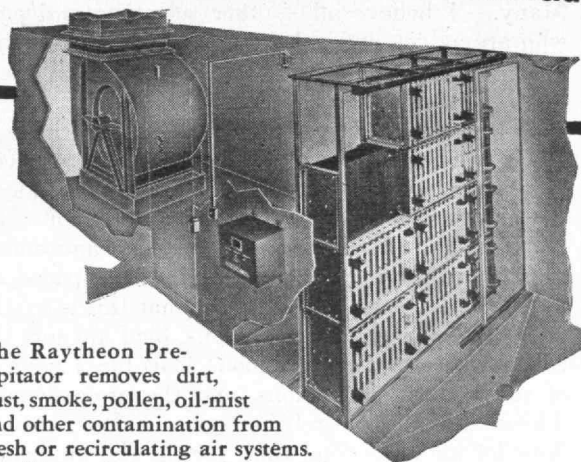
other spores in a reproductive process essentially sexual in nature. Obviously, when an *A* spore combines with a *B* spore, the normal complement of genes is re-established in the resulting yeast cell. Such a yeast cell, product of the union of unlike spores, is called a legitimate yeast. The fact that legitimate yeasts are normal in every respect, and have their full complement of genes, is borne out by their normal appearance and their ability to repeat the cycle of spore formation, spore germination, and spore union.

But *like* spores may also unite, producing a yeast individual having two sets of *A* genes or two sets of *B* genes, rather than the normal *A* plus *B*. Such a yeast is called illegitimate. Its abnormality is attested not only by a differing appearance but also by an inability to produce viable spores.

From the standpoint of the industrial microbiologist, the prime characteristic of a useful culture is stability. Once the microbiologist has selected a culture as being able to produce the desired change in the substrate in which the microbes will be grown on a commercial scale, he wants to be sure that the culture will continue to act in just this way. Now we may understand that illegitimate yeasts are prized industrially because they are entirely stable. Since illegitimate yeasts cannot produce viable spores, they can reproduce only by budding, and budding can yield only an exact duplicate of the parent cell. In contrast, legitimate yeasts can, as shown above, yield three different types of descendants, first, germinated spores or haplophase yeasts, second, yeasts resulting from legitimate union of spores and third, a variation of the second kind due to mutations. Legitimate yeasts are subject to mutations, or spontaneous changes in hereditary characteristics, whereas illegitimate yeasts are relatively immune to mutations. Hence we obtain the third type of descendent, referred to above.

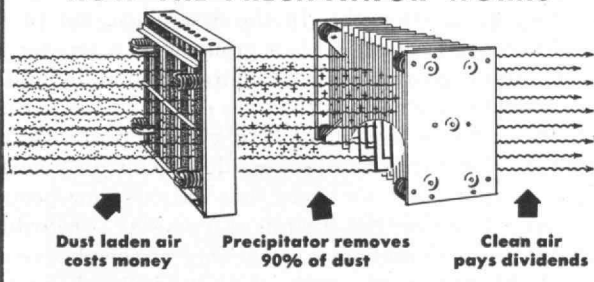
These advances in yeast genetics have placed on a more rational basis the maintenance of pure yeast cultures, which in the past was often done empirically. In addition, industrially valuable illegitimate yeasts may now be produced at will by preparing cultures of spores bearing like genes and stimulating union of such spores. Finally, the explanation offered by these findings for the instability of legitimate yeasts exposes a basic fallacy in traditional methods for establishing pure yeast cultures. These methods have been based on the isolation of a single yeast cell to serve as parent for a culture; such isolation was done either by dilution or by application of ingenious micro-manipulators capable of picking up a single tiny yeast from the field of the microscope. But, as we have seen, if the yeast cell so chosen happened to be a legitimate individual, this single yeast could produce descendants of three differing types and might therefore give rise to a mixed and unstable culture. On the other hand, if spores are isolated, they may be forced to unite with others of their kind to produce the valuable illegitimate strains of yeast. It becomes apparent, therefore, that the true biological unit in isolation of pure yeast cultures is not the vegetative cell, but the spore.

Raytheon Announces
For Early Delivery
the PRECIPITATOR
A New, Perfected
ELECTRONIC AIR CLEANER
For Industrial, Commercial and Institutional Needs!



The Raytheon Precipitator removes dirt, dust, smoke, pollen, oil-mist and other contamination from fresh or recirculating air systems. Flexible unit construction permits any combination of two basic cell sizes, for any size installation. Everything essential to operation is supplied. Ask for information also on single-cell portable units.

HOW THE PRECIPITATOR WORKS



HERE is a major contribution to the science of *air-cleaning*—the Raytheon Precipitator. In new plants—old plants—in buildings of any size, for any purpose—the Precipitator can work miracles with the air.

It is a new, perfected electronic design, the result of painstaking engineering development. And what's more—it is *ready for early delivery*.

The Precipitator cleans air like magic—removing dust particles as small as one-tenth micron in diameter. Dust in the air is first given a powerful *positive* charge—then collected on plates carrying a heavy *negative* charge. Nothing but clean, clear air can get through! And a simple flushing cleans the collector plates.

Engineers, contractors, superintendents, plant managers . . . investigate now. The Raytheon Precipitator represents a *new advance* in air-cleaning equipment. It comes in cell-units, like building blocks—so each installation may be tailored for the job. No waste of power or equipment—no overload or underload.

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SCIENCE, STRENGTH AND STABILITY

(Continued from page 556)

I do not judge, I do not evaluate the issues in question, but I do point out to you that we have within the month seen this whole mighty nation brought to the very verge of impotence and frustration by the extreme direct action of a single small group in its population. Enthusiasts for direct action on whatever issue must remember this, and must balance possible ill effects against the supposed worth of speed — if indeed direct action really does produce speed.

Science as a profession has not of course yet reached its answer to the dilemma; it is in the process of doing so. Some scientists, some engineers, have turned to direct action involving at times the extreme techniques and tactics of the pressure group, conscious, one hopes, of the hazard they run of becoming ex-scientists, ex-engineers, as a result. It is too early yet to judge of their effectiveness. Some scientists, as witness those in the Board of Consultants who drew the notable state paper known as the Lilienthal report, have ably collaborated as professional men in laying bases for public policy, thus engaging in tempered direct action within the frame of government. Many — I believe all — other scientists and engineers who are as yet undecided are searching their minds as never before, in the sincere effort to determine what their duty is and how best to perform it.

So we are brought back to the position of the sage who, in his insistence on definition and clear statement, was indeed the forerunner of the rigor and the discipline which we as scientists and engineers must strive for — back to Socrates, and to his declaration that an unexamined life is not worth living. Though in this swift-paced age the time is short, I welcome the fact that this is so, that the occasion for true analysis is on us, for I am sure that the end result cannot but be good. Thus far, I have spoken of science, and professions, and the professional man's dilemma, almost entirely in terms of the United States. Now let me go beyond that, for the full implications of the question, as concerns science, extend beyond national boundaries even though a sound solution of it will mean the greatest good at home.

In the self-scrutiny to which we are brought by the inescapable force of events, scientists and engineers possess more immediately than any other professional group, two very great strengths. In the first place, our professional activities enrich us as a group with a greater frequency and a greater range of contact and collaboration with men of other nations than are enjoyed by other professions. In the second place, and more importantly, the very nature of the body of knowledge with which we deal knows neither time nor place, nor nations, nor peoples. Astronomer or zoologist, Briton or Yugoslav, rock-ribbed Republican or Communist, in the face of the elusive and eternal objective truths with which he deals, the man of science is simply that — a scientist. As a profession, then, we have common ground with men of all kinds and conditions — common ground that, in these days of the breathtakingly swift juxtaposition of races, creeds, cultures, and political philosophies, is of inestimable value as a means toward understanding and mutual confidence. Whatever

(Concluded on page 588)

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(Concluded from page 586)

we do toward furthering meetings on that common ground, toward fortifying and confirming it as a starting point for other meetings by other men, is so much done toward the inculcation of collaboration and concord among the peoples of the earth.

Here is an ethical imperative such as no professional group before this time has had the privilege and the opportunity to meet. As here at home in the United States we examine into the standards of honesty and objectivity which science requires but which our profession has not yet brought together in a self-imposed and self-administered code of ethics, we shall accomplish two great ends. First, we shall clarify and confirm in our own minds what and why we are and how and why we can best share in the forming of the sound public opinion essential to strength and stability. Second, we shall chart the broad reaches of knowledge and determine the seamarks of sure intellectual and ethical principles which because they are common to us as scientists will, we know, be recognized by scientists everywhere as common to them also. So in the full stature of a matured profession men of science throughout the world can join in meeting the responsibility stemming from their ministry to the people and can do their full share in the formation of the enlightened world opinion which must be developed for peace among the nations to be assured.

(Continued from page 564)

A second essential step for the United States in the scientific age is to evolve a new degree of correlation between science and statecraft. One of our honored guests, Vannevar Bush, has recommended in his prophetic report "Science, the Endless Frontier" that the United States must have a National Research Foundation, a scientific reserve corps, and scientific attachés attached to missions overseas.

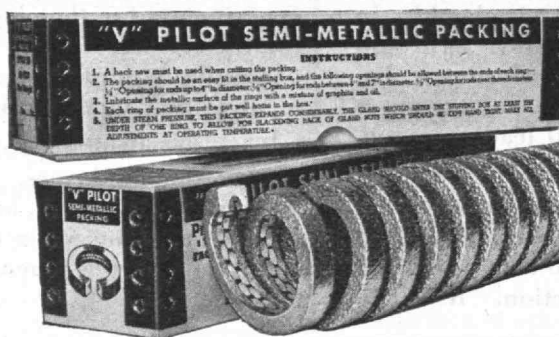
Indispensable as are these proposals, I believe that certain additional measures are equally necessary. The President's cabinet should at all times contain a scientist of highest repute to advise the President of the bearing of domestic and foreign scientific developments upon national policy. Only the presence of such an individual in the cabinet of the United States can assure that at every stage of policy making and execution the implications of science and technology will be duly considered. National existence may hinge upon a proper appraisal of these facts at any time. The creation of such a post does not necessarily mean the establishment of a National Department of Science. It is essential only that such an adviser be a full member of the body in a position to speak with such authority at all times and to all officers of government.

I would also suggest that there should be established a position of Assistant Secretary of State for Scientific

(Continued on page 590)

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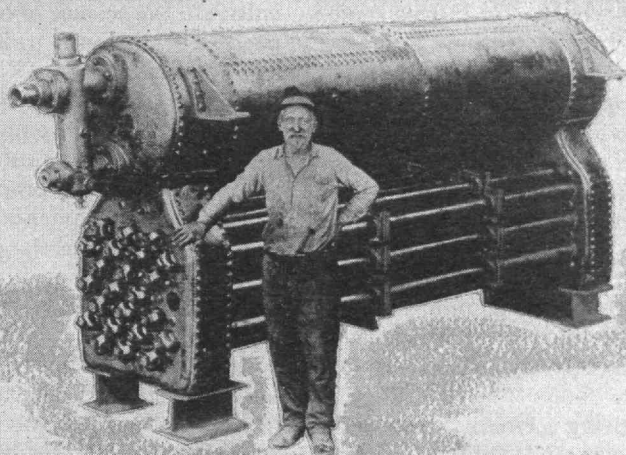
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INTERNATIONAL RELATIONS

(Continued from page 588)

Affairs in order that our foreign relations may be conducted in the light of a proper evaluation of our power at home and of events abroad. No system of consultants is an adequate substitute for a high ranking policy officer within the Department of State. Reports of scientific attachés attached to American missions abroad will not receive suitable attention unless there is someone to correlate them and to initiate the appropriate action in response thereto. Successful policy can be formulated only by due consideration of all factors involved and by constant association of those needed for this purpose.

A further suggestion which I would offer in this same connection would be that the United Nations Security Council should be provided with a Scientific Advisory Committee. The Atomic Energy Commission approved at the General Assembly in London last winter may be a step in the right direction if it can be made to operate more effectively than the Security Council and the Military Staff Committee have been able to function as yet, and if its jurisdiction may be more broadly defined. A United Nations strong enough to maintain peace and security in the scientific age should be equipped in its own right with machinery and knowledge which will enable it to act quickly, intelligently and effectively for the enforcement of the Charter.

There is something more to being a Great Power than merely possessing impressive size and military power. Greatness demands a sense of responsibility, trusteeship.

The United States has achieved the leadership which it enjoys today in part because others have had confidence in it born of past deeds of unselfishness, of generosity, of respect for the weak, and promotion of a better life among all peoples. These virtues it must keep and cultivate in the scientific age.

And so in facing the technology of international peace we are brought back to the proposition that as the developments in science and engineering depend upon the mind of man, so also the issues of peaceful growth or of disastrous conflict among the nations revolve about the concepts and actions of fallible men.

In an address prepared for delivery on an occasion which occurred after his death President Roosevelt observed that "if civilization is to survive, we must cultivate the science of human relations, the ability of all peoples of all kinds to live and to work together in the same world at peace." If, as Francis Bacon believed, science, if given a suitable opportunity, can enlarge the "bounds of human empire to the effecting of all things possible," we must return to the basic thought of Alexander Pope — "the proper study of mankind is man."

The accomplishments of man in civilizing entire continents, in bridging the oceans, in harnessing the energy of the atom and in obtaining agreement among 50 nations for an organization for peace and security afford room for hope that if the scientists and the statesman concert their endeavors, a better world and a more abundant life can be attained in the scientific age.

The problems involved in the relationship between technology and international peace, which have been

(Concluded on page 592)

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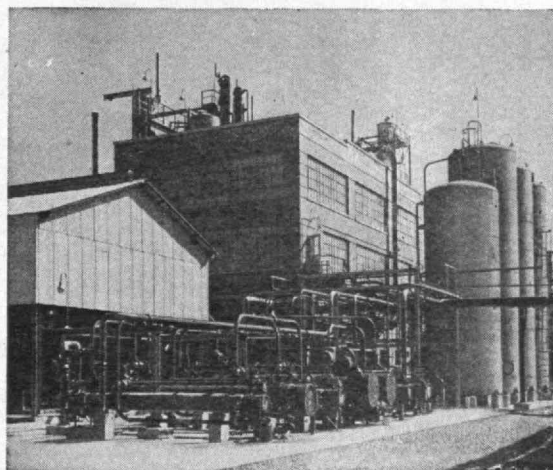
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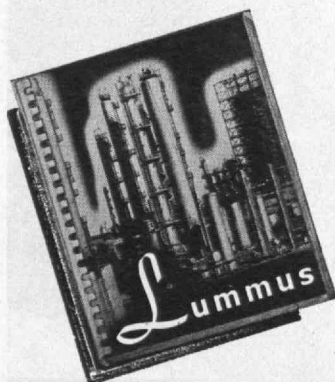
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INTERNATIONAL RELATIONS

(Concluded from page 590)

touched upon here only by way of example, demonstrate that a study of the fundamentals of international relations has become an essential part of the education of the engineer in the scientific age, for the engineer functions in a human as well as in a material world. The complexities of international affairs can no more be measured or dealt with properly by rule-of-thumb methods than can the construction of bridges, the production of synthetic fabrics, or the development of electronics.

The time has come for the scientist to pioneer on the frontiers of human relations. To fight a war, Oliver Wendell Holmes once said, "You must believe in something and want something with all your might. So you must do to carry anything to an end worth reaching." More than that one must be willing, said Holmes, to commit one's self "to a course, perhaps a long hard one, without being able to foresee exactly where you will come out." So it must be in "The Technology of International Peace."

MAIL RETURNS

(Concluded from page 536)

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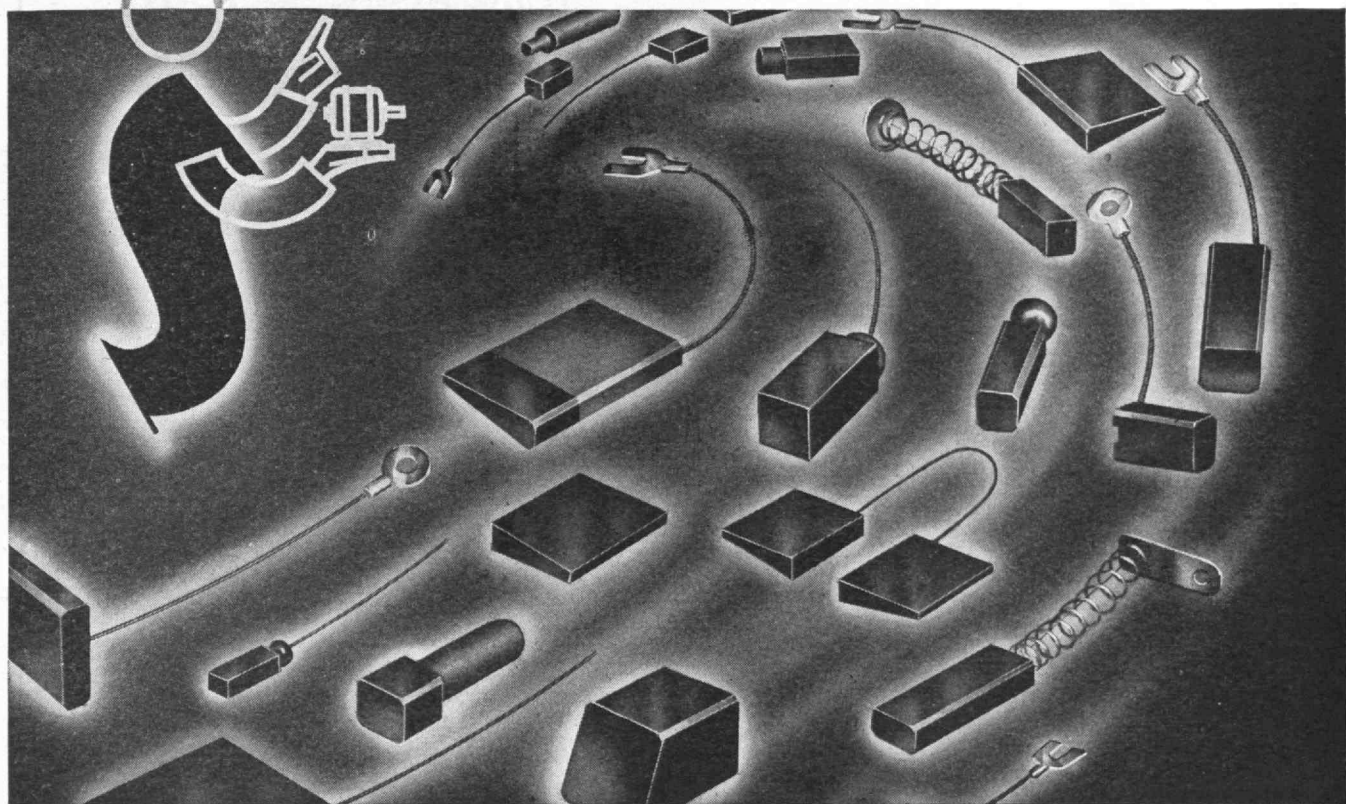
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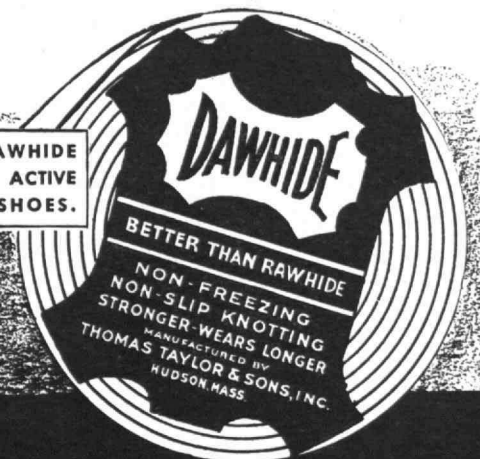
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LOOKING AHEAD AFTER 50 YEARS

(Continued from page 566)

outlined the natural laws governing the production of wealth. I can see him now, standing before us in Huntington Hall, emphasizing the difference between the law of supply and desire and the law of supply and demand. He said, "Remember that the desires of people will always exceed the supply, but the demand results only when they are willing and able to pay for the things desired."

It seems as though some of the truths these men taught us hold the key to the remedy of today's troubles. Do not many of today's international and domestic troubles come from failing to realize these truths?

Mass production through concentration of capital and subdivision of labor rapidly increased productivity, lowered costs, and increased the average standard of living. In many instances, however, it gave undue power to wealth. This power was abused and the bargaining power of the individual was reduced. Many laws have been passed to prevent monopoly and curb those selfish abuses. Laws for collective bargaining by labor have been encouraged to equalize individual opportunity and to protect public welfare.

The labor of the hand can produce a certain amount of product. When to this is added the labor of the head in applying the tools of industry and the fruits of scientific research, the production will be increased a thousand fold. But only when a man's heart is also in his work will the ultimate goal be reached. This can come only when he, as an individual, is protected in his life, liberty, and the pursuit of happiness. Today such world foundations of

tranquility are threatened by the forces of selfishness, by the lust for power by those who would place might before right.

In government, as in industry, there exists the old contest between monopoly and competition. The problem to be solved is whether the state shall be all powerful and master of the people or whether the freedom of the individual shall be preserved, with the state becoming the people's servant.

In these days of mass production in industry, only through coöperation among — rather than by antagonism between — those who furnish the labor and those who furnish the tools of industry, can the present standard of living be maintained or improved. We come nearest to the ideal condition whenever an individual is free to choose his own employer and the employer is free to choose his employees; when there is plenty of competition and government of the people acts to uphold the principles expressed in the Declaration of Independence and in the Constitution. The individual achieves independence and ability to bargain for his services when he controls the freedom of his labor and the necessary tools and knowledge to apply it. Whenever there is a monopoly in the control of capital, or a monopoly in the control of labor, individual freedom is threatened.

In modern times the growth of mass production has resulted in the concentration of wealth in the hands of a relatively small number of people and an approach toward monopoly. Many abuses of the power of wealth followed, each of which tended to reduce the freedom and

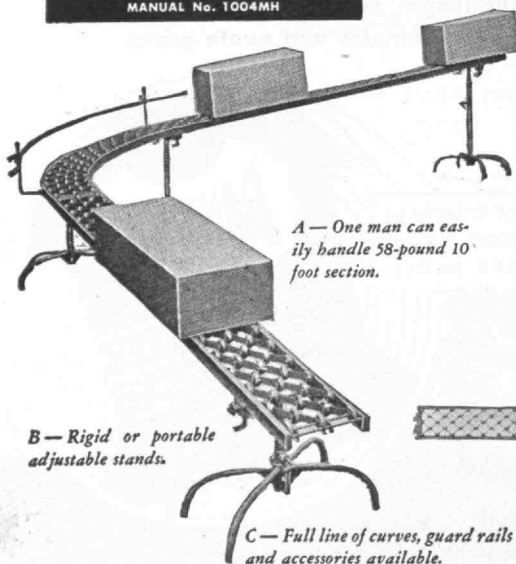
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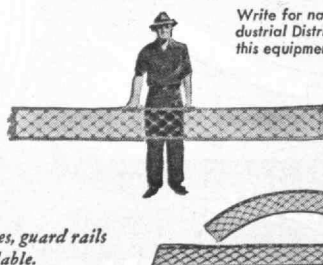
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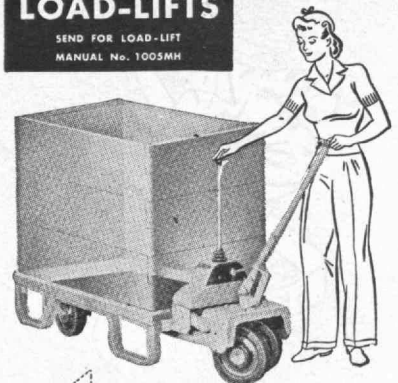
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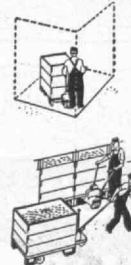
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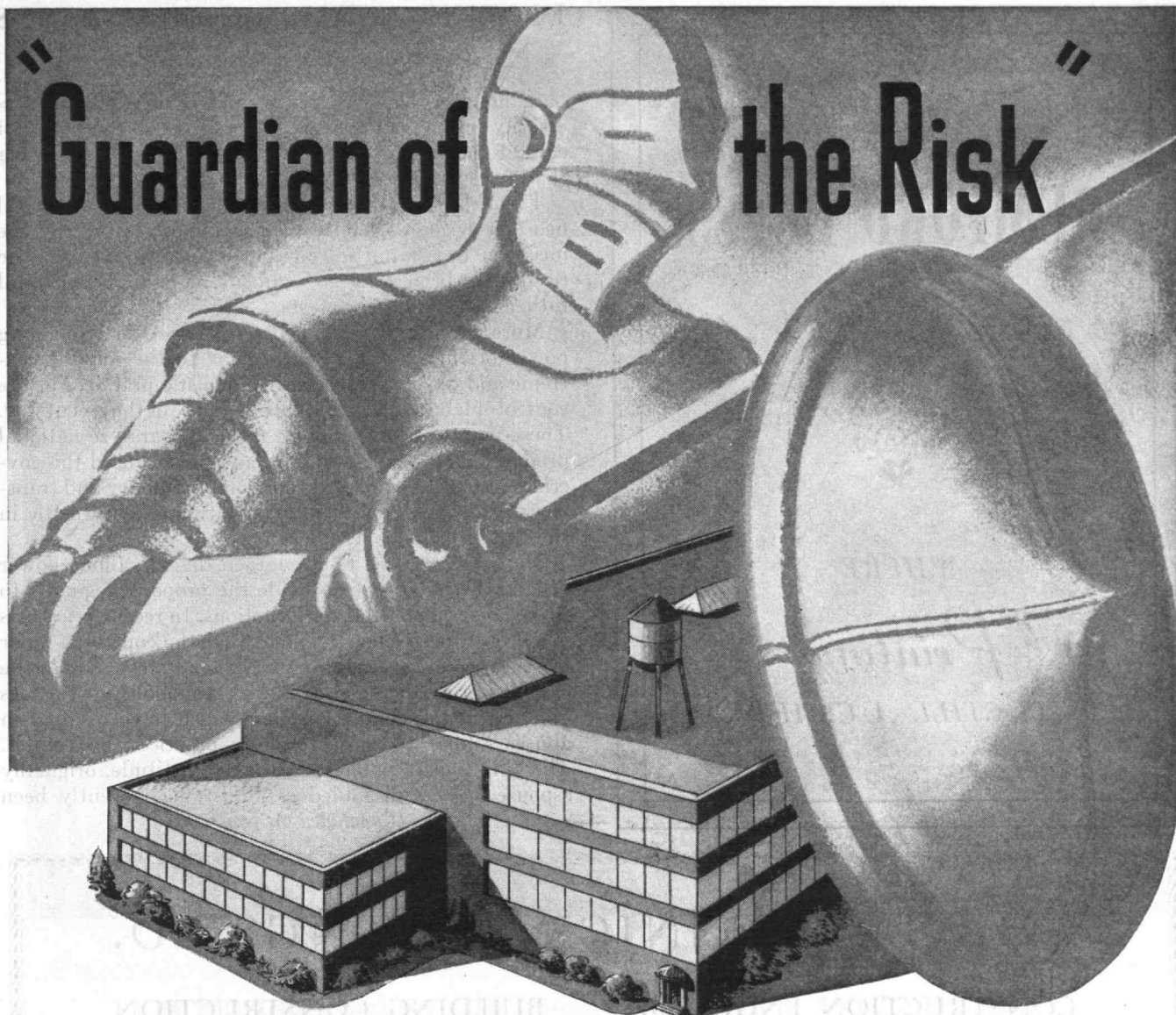
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LOOKING AHEAD AFTER 50 YEARS

(Continued from page 596)

bargaining power of the individual. This condition necessarily resulted in a series of laws to curb the power of capital and to prevent its use for selfish purposes rather than for services of the many.

Through legislation and taxation the power of capital has now become so restrained as almost to destroy the incentive to risk putting capital to constructive use. The result has been that government has supplied capital rather than private interests.

More recently laws aimed to restore the bargaining power of the individual have gone to the opposite extreme and have resulted in monopolistic practices in the control of labor, especially since the close of the recent war. These practices have gone so far as to paralyze national production and transportation and have caused the government to take control of the tools of industry and transportation, thus concentrating control of all wealth in the hands of the government.

Many laws passed to strengthen the bargaining power of labor have failed to provide the proper safeguards to make labor responsible for its actions. In recent years this has been true to such an extent that the control of labor has been concentrated in fewer hands than was ever the case before. With increased power, monopolistic practices grew up in the control of labor which have resulted in abuses similar to those formerly practiced by capital. The old, selfish "public be damned" attitude, originally espoused by a misguided capitalist, has recently been

(Concluded on page 600)

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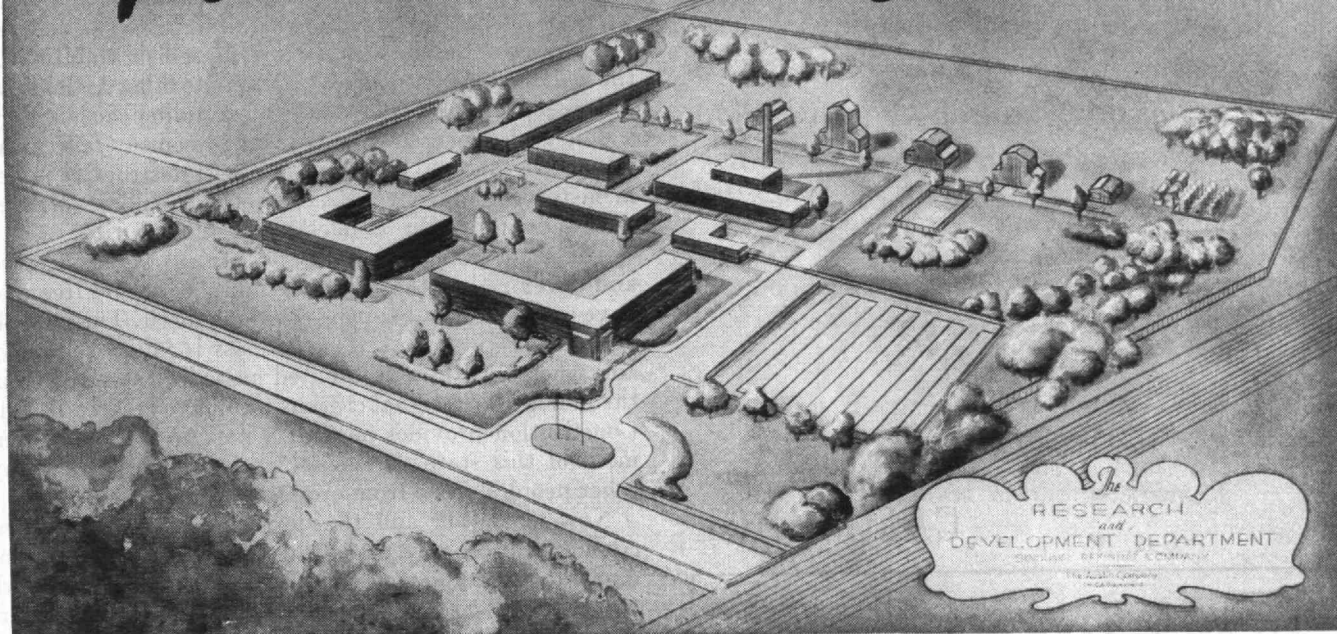
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LOOKING AHEAD AFTER 50 YEARS

(Concluded from page 598)

applied by labor leaders with wide and distressing effects. This is a natural result when one class tries to gain a selfish advantage at the expense of the people as a whole. The processes of bargaining have been distorted to such an extent as to require government to take over the control of capital to carry on the bargaining in order to protect the public.

The end result of a continuation of this trend would be an all-powerful state with the individual subject to the whim and planning of a dictator. Should this happen, the individual bargaining power of both capital and labor would be completely destroyed.

The recent war was caused by the selfish ambition of the leadership of one nation to dominate other nations. At the outset attempts were made to maintain peace through a policy of appeasement. After appeasement failed, the war which followed called for the most destructive forces in history to prevent an Axis victory. Millions of lives were sacrificed to bring back peace and security.

The American principles of government were conceived and developed so that the individual would be free and have opportunity to advance through merit. These ideals can best be preserved when no class is favored unfairly and when wealth is distributed as widely as possible in the hands of individual citizens who have created it. Our Constitution provides us with a pattern for the attainment of this state. It has set an example which many other peoples, freed from oppression, have copied.

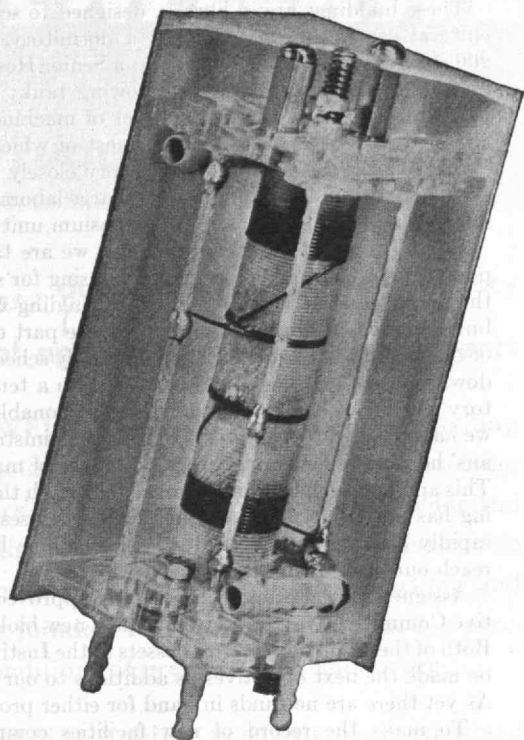
Now air power and the development of high speed communication have made the world one unit. The fundamental principles of our Constitution applied to all nations, and carried out as intended by our forefathers and practiced for a century and a half, offer the most successful formula for a world of peace and progress.

A similar restoration of the balance of power in industry between capital and labor offers the same opportunity for peace and progress within the nation.

The longer abuses of power are tolerated, the more difficult it is to apply corrective measures. Appeasement and temporary measures of expediency will not prove successful in solving the international problems of clashing ideologies, nor will it correct the condition within our country where people are divided into classes and engaged in industrial strife. The cause must be removed by curbing the forces of selfishness whether applied by a nation or by an economic group within a nation.

The results of the advances in engineering, research, and technology, which can now be applied to our economy can make the world of tomorrow one of greater opportunity than we have ever known. The increase in knowledge and power can also be used for destructive purposes. If there is lack of vigilance, one nation can now become powerful enough to conquer all the world quickly.

It is the desire of all men to be free and to get along in peace and harmony with their neighbors and to make the earth a better place in which to live. Whenever justice and right are challenged by the selfish powers of might, appeasement has given way to a fight for principle—and this is the price we must be able and willing to pay if we are to transform our desire for peace and freedom into demand.



NEW IF TRANSFORMERS

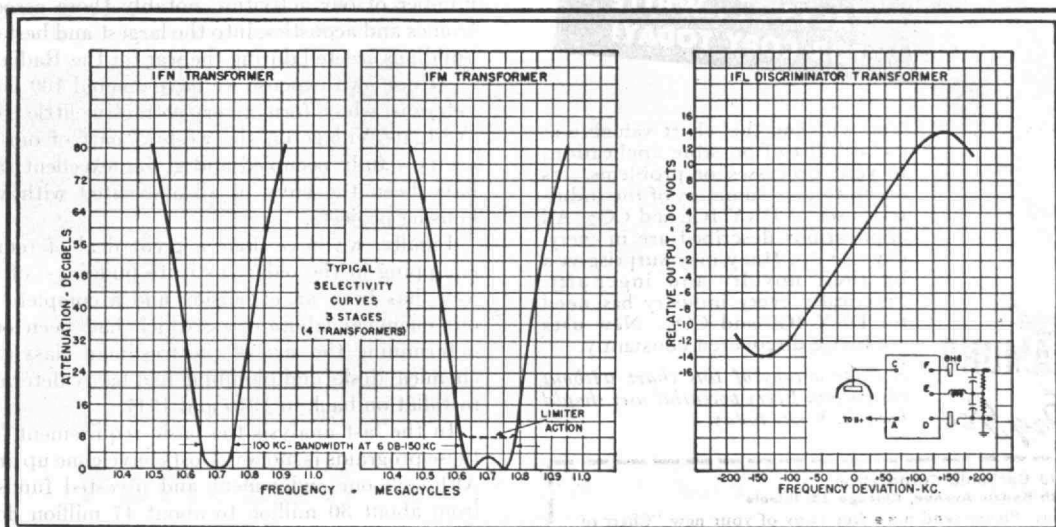
These new IF transformers are designed to meet the highest standards of performance in high frequency FM and AM. All operate at 10.7 Mc., making them ideal for the new FM band. Iron core tuning is employed and the tuning does not affect the bandwidth of 100 Kc. for the IFN or 150 Kc. for the IFM.

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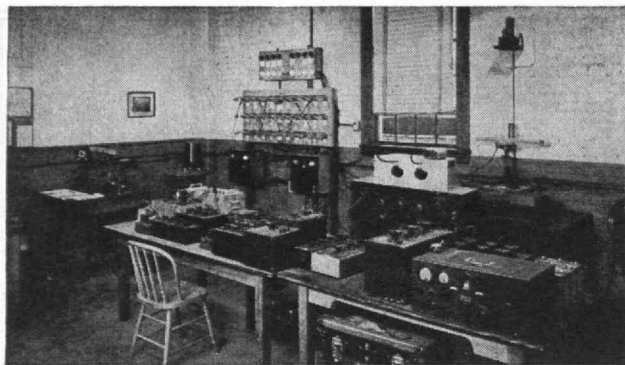
Insulation is polystyrene for low losses. Mechanical construction is simple, compact and rugged. The transformer is $1\frac{7}{8}$ inches square and stands $\frac{3}{8}$ inches above the chassis.



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ALUMNI DAY — JUNE 1946

(Continued from page 572)

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These buildings are: a library, designed to serve as the chief cultural center of the Institute; a dormitory, housing about 200 students and planned for use as a Senior House; a combined hydraulic laboratory and naval towing tank; a machine tool laboratory to house the fine new set of machine tools recently acquired to replace the old tools, most of which were relics of World War I; a gas turbine laboratory closely associated with the Sloan Automotive Laboratory; a large laboratory for nuclear science and engineering; and a gymnasium unit.

In addition to these new buildings, we are taking two temporary steps to provide emergency housing for students during the period of the "veterans' bulge." Building 22, a temporary building erected during the war to house part of the activities of the Radiation Laboratory and originally scheduled to be torn down in July 1946, will be converted into a temporary dormitory which can house 500 students in reasonable comfort. Also we have applied to Veterans' Housing Administration for veterans' housing to accommodate 235 families of married students. This application has been approved, although the definite housing has not as yet been assigned. These houses can be put up rapidly and we hope to have them available by the time we reach our peak of enrollment next winter.

Assigned second priority and not yet approved by the Executive Committee are a faculty club and a new biology laboratory. Both of these will be very great assets to the Institute and should be made the next objectives as additions to our physical plant. As yet there are no funds in hand for either project.

To make the record of new facilities complete, I should include also the steps which have already been completed to our very great advantage. We have acquired for special research use the Hood Building near the Institute on Massachusetts Avenue. It was converted during the war into an excellent permanent laboratory building. A few months ago we moved into our new Chemical Engineering Laboratories which had been constructed during the war and operated by the Chemical Warfare Service. These laboratories were built at our expense and to our own design, following a very careful study by our Corporation's Visiting Committee and staff of the Chemical Engineering Department. We have also moved into Building 20, the fine new permanent building erected during the war for the Radiation Laboratory and into which the Institute put the funds needed in excess of those supplied by the government which would have erected equivalent temporary quarters. We have also moved a number of our activities, notably those associated with electronics and acoustics, into the largest and best of the temporary buildings erected during the war for the Radiation Laboratory.

At our own expense we have erected 100 houses for married veterans, which form a very attractive little community named Westgate Village on the western part of our property. These are now fully occupied and giving excellent satisfaction. They have been the envy of all associated with various veterans' housing projects.

Finally, we have done a great deal of remodeling and re-equipping in the older Institute buildings, of which the major item has been an expansion and a complete re-equipment of our chemical laboratories, which had been our bottleneck in determining the size of the freshman class and in which the chemical desks and plumbing had badly deteriorated since their installation back in 1916 and 1917.

In the last analysis the basic requirement for implementing these programs is money. Costs have gone up and are still rising. Although our endowment and invested funds have increased from about 30 million to about 47 million dollars during the past 16 years, the greatly depreciated interest rates have actually reduced our over-all income from investments.

These factors create an exceedingly difficult situation. We have been able to meet it and to embark upon future plans with

(Concluded on page 604)

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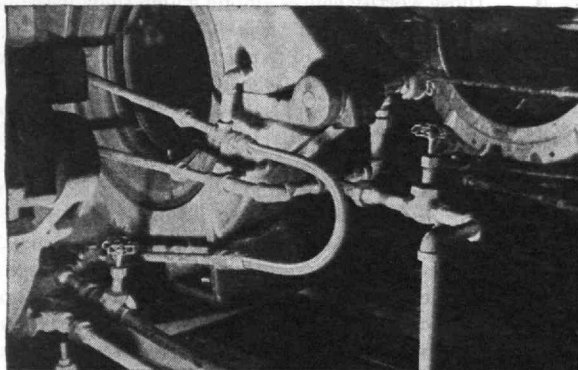
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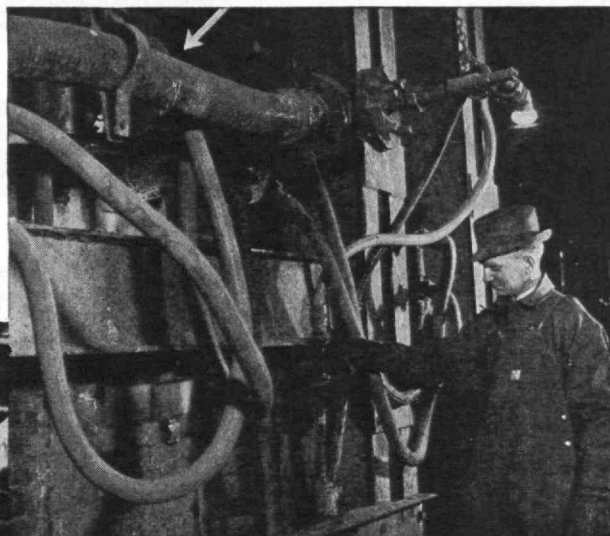
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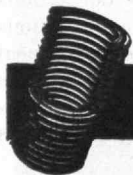
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ALUMNI DAY—JUNE 1946

(Concluded from page 602)

some assurance only because of two factors: the generous financial aid which has been given us by individuals, foundations and industrial companies; and the research and educational contracts from Army, Navy, other government agencies, and industry. It is largely through this latter type of assistance that we are now operating on a peacetime budget approximately double the largest pre-war budget of the Institute. This gives us a great opportunity; at the same time it does involve a very real risk as to continuity because these outside sources of funds can be guaranteed usually for only a year or two ahead, and there is always the possibility that a change in government policy or in the general prosperity of the country may result in their very substantial reduction. The present trend, however, is in the direction of an increase rather than a decrease in these outside sources of support, and in the extent to which the Institute is asked to cooperate in excellent educational or research programs of this sponsored type.

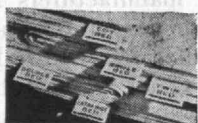
I know that you will be interested and gratified, as I am, in knowing the extent of direct contributions, not involving any contractual obligations, but coming as outright gifts or grants to the Institute for its general or special purposes. During the past eleven months of our current fiscal year these gifts and grants total \$2,456,963. This eleven months' total already exceeds the largest figure for total gifts in any twelve-month period in the last twenty years, and only three times in the entire history of M.I.T. has this figure for annual gifts been exceeded. These times were when George Eastman made his three principal gifts.

Of the total gifts thus far this year, almost exactly \$1,500,000 came as gifts from industrial companies, about \$180,000 came as grants from foundations, and about \$780,000 represent gifts from individuals. Of special note is the approximately \$150,000 received as net contributions to the Alumni Fund in excess of the cost of operating the Alumni Association. This continues a gratifying record of continuous growth since the inception of this Fund. A continued income of this magnitude is equivalent to capital investment of four or five million dollars. It is a pleasure to report that the next year's Alumni Fund has started off at record-breaking pace.

In his address on this occasion just a year ago, Gerard Swope pointed out that the Alumni Fund gifts, helpful and encouraging as they are, probably represent only about 0.06 of one per cent of the total income of our alumni. When looked upon in this manner the results are not so impressive, and suggest that many of our alumni may view the Alumni Fund as just another one of those worthy causes among which they distribute their benefactions. In terms of tithe, so customary in contributions to the church, and the 15 per cent deductible recognized in taxes, and the ordinary percentage given to worthy causes by good citizens generally, I believe that this Alumni Fund figure should and can be very substantially raised, by the simple process of suggesting to our alumni that the importance of M.I.T.'s work justifies them in giving this Fund a higher priority in their list of contributions. In fact, the M.I.T. Club of Chicago has set for its goal an increase from 0.06 of one per cent to 0.5 of one per cent of income, and hopes that other alumni groups may follow suit.

In conclusion, may I simply say that the opportunities in the era ahead for this institution are very great and of exceeding interest. It will require the most effective, loyal, and generous cooperation of every alumnus and friend of M.I.T. to bring these opportunities to effective realization. I believe that we are now in an exceedingly critical period because our actions now will set the pattern for the new era ahead. We are anxious that this pattern be drawn with vision and courage, and appeal to every alumnus and friend of this institution and to every one who really believes in the value of its objectives and accomplishment to make a special effort to help us in bringing the various plans which I have described to full fruition.

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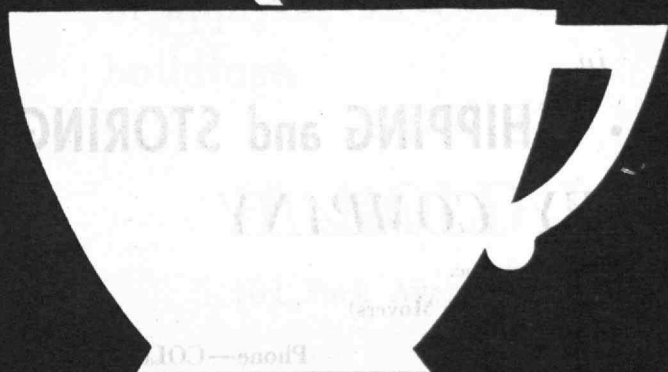
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APPLICATIONS OF SCIENCE TO FOOD

(Continued from page 560)

of this asset, as well as of the scarcity of land suitable for pineapple cultivation, we have become staunch supporters of the Federal Soil Conservation Service. The magnitude of our program is such that we maintain our own Soil Conservation Service.

Mile after mile of gently undulating terraced plantings now cover the mountain slopes of Oahu and Lanai and soil conservation practices begun in 1939 have now been applied to more than two-thirds of our plantation areas. At a cost of approximately \$350,000 we have already completed the installation of 1200 miles of terraces and the construction of accessory diversion ditches and dams. The field layouts are designed to channel the heavy rains into slowly flowing rivulets, conserving at one time both the invaluable top soil and the badly needed moisture.

In only the old ratoon fields, awaiting incorporation in the soil conservation program, do we find the rigidly perfect pattern of straight rows and intersecting roads. These fields provide a sharp contrast, visually and functionally, to the new techniques. Under this old method of planting there is an easy channel for prompt drainage, but unfortunately this is attained at a cost of irreplaceable top soil. In the first 40 years of intensive cultivation considerable damage was done to some of our lands.

It is our belief that contour planting will serve to enhance this primary asset — good land, suitably located. Many problems remain to be worked out in adapting

mechanical operations to the new contour farming, but the results achieved so far are encouraging.

Farm mechanization has developed to a considerable degree in the Hawaiian Islands, particularly in the pineapple industry. Farm equipment manufacturers have constructed new types of farm machinery and, in addition, mechanical engineers engaged in agriculture have developed specialized machines to alleviate arduous field work and increase agricultural efficiency. The assortment is wide, running all the way from the familiar items of farm machinery to specially designed cultivators, harvesters, fertilizing machines, sprayers of weed killing and other chemicals, and a number of other machines.

Fertilizer was formerly applied by hand, with each application carefully placed at the base of the plant. The magnitude of this task may be illustrated by the fact that our company alone usually cultivates approximately 350,000,000 individual plants. Today fertilizer is almost entirely applied by machines specially constructed for that purpose, and the timing, kind, and quantity of fertilizer are all scientifically controlled from the running records of the plant physiologist who reports, from continuing analysis of the growing plants, their need for food.

Weeding by means of hand hoeing was one of the most difficult and time consuming of all plantation operations, and it is now largely taken care of by machine cultivation and the spraying of herbicides. Experiments are also being conducted in the use of flame cultivators for the eradication of weeds.

New types of tillage equipment are now in process of development which, in the event mulching with plants does not prove feasible, will facilitate reconstitution into the soil of the 125 tons of old plants per acre which are

(Continued on page 608)

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APPLICATIONS OF SCIENCE TO FOOD

(Continued from page 606)

available as a soil component for the new crop of pineapples. The intensity of cropping of our soils rarely fails to attract the profound interest of both the professional and novice in farming. Scientific tests and practical experiments have indicated that our soils can remain in almost continuous production without a true fallow.

Contrary to the practices in many mainland areas, crop rotation is not employed. Pineapples follow pineapples year after year — cycle after cycle. In most areas our fields have shown no decline under this regimen. Instead, the majority of our areas have shown substantial increases in production.

Harvesting by machine has been one of the most difficult problems. Since the nature, size, planting patterns and other factors of the various types of crops are different, the matter of design has taxed the ingenuity of engineers. In the California lettuce industry this problem was solved by mechanical conveyors which transported lettuce from fields to trucks.

In harvesting pineapples it has been the practice for workers to pick and carry the fruit from fields to the roads where it was decrowned, graded and placed in boxes which were then loaded onto trucks. At the cannery the fruit was unloaded box by box. Such operations required a formidable amount of burdensome hand labor since the Islands produce in excess of half a million tons of pineapple a year. Furthermore, more than 70 per cent of this production is generally harvested during a 12-week summer period.

As a result of determined effort and trial with several models, a satisfactory harvesting machine has been developed by our company. Each of these machines will ride like a giant crab upon specially constructed trucks and from each of these 8,000 pound units a 50-foot conveyor will stretch out over the adjacent pineapple lines like an extended arm. Upon this conveyor as many as 200 pineapples per minute will be placed by the field workers who now will be freed from the extraneous burden of transportation and can give their full attention to the selection of fruit of the proper ripeness for picking. As each truckload of fruit is filled, the harvester mechanism will extend its hydraulically controlled legs straddling the trucks and elevate its body so that the full truck may move out from under it. It will rest in this position while the succeeding truck is placed in readiness to receive the conveyor and in its turn is ready to be filled with the ripened fruit. The bins are transported from fields by trucks and are unloaded mechanically at the cannery. Many other arduous farm jobs are now done by machine.

Waste in the processing of foods is a major concern of modern agriculture; such waste of food-yielding products in our country has been appalling. One example of how waste has been cut down in our industry is illustrated by the use of the ion exchange technique which previously had been used primarily for water purification. With the development of new synthetic resins, this technique has been experimented with as a means of refining both beet and cane sugar. In our own company we followed this

(Concluded on page 610)

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APPLICATIONS OF SCIENCE TO FOOD

(Concluded from page 608)

lead and we are now about to install ion exchange apparatus for the treatment of waste mill juices. By this method we can recover, from otherwise waste fluid, large quantities of natural sugars for canning syrups, as well as substantial additional amounts of valuable organic acids.

It is interesting to point out in passing that one result of this scientific approach to pineapple production is that pineapple, possessing quality nutritious properties and representing a high degree of consumer value among agricultural commodities, has become a staple in the diet of the consuming public in America.

Coverage of this subject would not be complete without directing attention to the need of educating people in the various parts of the world to the importance of maintaining a properly balanced diet. In Hawaii we have come face to face with this problem because most of the workers on our plantations are Japanese and Filipinos whose peculiar diets are generally known.

In an effort to improve general health conditions amongst rural plantation workers, carefully controlled experiments were conducted with different types of diets. The results obtained disclosed that the determining factor in a properly balanced diet was not whether the diet was starch (as had been taught in all schools) but whether the starch was in the form of an alkaline or acid residue type.

As was to be expected, the problem of educating these people concerning the value of a properly balanced diet

was a real one. However, the improvement shown in general health conditions in these areas was most gratifying, but the most significant advances were made in preventing tooth decay and reducing infant mortality.

Considerable time would be required to cover this vital subject but it seems safe to conclude that on the basis of the studies conducted in Hawaii there is ample evidence to indicate that programs of this nature can accomplish much in improving health conditions throughout the world.

The progress in the technology of food production has been so rapid that its implications are as yet little understood. Food for the hungry is to be measured now, not so much in terms of areas of usable soil, as in terms of the degree to which scientific knowledge is applied in the use of that soil. The means are there, if properly utilized, to produce an abundance where scarcity existed before.

Let me emphasize in closing that the examples I have cited of the progress made in food technology by no means reflect complete satisfaction or complacency with the job done thus far. They serve only to illustrate the way to improvement and to fire our imagination in tackling the unfinished tasks that lie ahead. These developments and many more must be used in the future to chase from the world the spectre of hunger and the concomitant threat of war. Currently, we must share the responsibility of feeding exhausted nations, and tightening our own belts the while, if necessary. But our responsibility to our neighbors is more than the giving or selling of our plenty; it is to pass on the fruits of our science and technology and our research in order that they may stand on their own feet. A gift of scientific and technological knowledge is of far more lasting value than the gift of food itself.

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ROBERT F. BURNETT '10, 85 North Main Street, Fall River

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ALBERT D. KING '32, De Bell and Richardson, 3 Post Office Alley, Springfield

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ALLYNE C. LITCHFIELD '17, U. S. Rubber Company, 6600 East Jefferson Avenue, Detroit 32

MINNESOTA

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HARRY L. HAVENS '09, Havens Structural Steel Company, 1713 Crystal, Kansas City

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WALTER R. C. RUSSERT '18, Anaconda Copper Company, Butte

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TECHNOLOGY MEN IN ACTION

THE ALUMNI FUND — ITS PROBLEMS AND GROWTH

Class of '96

TWO YEARS AGO, on the occasion of its 50th reunion, the Class of 1894 initiated what it hoped would become a custom. It increased its giving to M.I.T. through the Alumni Fund to a point at that time unprecedented. Fifty per cent of the class gave a total of almost \$2,600, an amount which was 260 per cent of quota. It was a memorable accomplishment.

Last year, 1895 had plans of its own which did not include this form of remembrance. Then came the Class of '96!

Early last year, Class Secretary Locke and Class Agent Grush laid their plans. They firmly believed that '96 could achieve a record difficult to better, and they set out to do it. At the Alumni Dinner on June 8, the results of their efforts were made known. That evening, Secretary Locke presented to President Compton the sum of \$9,974, as the 50-year gift of the Class of 1896, made through the Alumni Fund.

Here is indeed a mark for future classes to shoot at. Half of the class made it possible, and the fund year is not yet ended. Undoubtedly others will be heard from. Even so, the present amount of the gift is more than 600 per cent of the class quota! With one exception, '96 has now given the greatest amount of any class in any year since the start of the Fund in 1940.

The class officers and those members who, through their generosity, made this outstanding record possible, are to be heartily congratulated on a job well done. May it serve as inspiration and example to those who follow!

TECHNOLOGY MEN IN ACTION

M.I.T. MEN AT WAR

Up to June 13 over 9,562 Institute Alumni, including 37 Admirals, 8 Commodores, and 96 Generals, were reported as being in the active naval or military services of the United Nations. Among the new promotions to be reported is Maj. Gen. Thomas H. Green '14. There were 307 Alumni who had been decorated, and 188 who had made the supreme sacrifice.

With its issue dated November, 1942, The Technology Review began publishing "M.I.T. MEN AT WAR." Although hostilities have ended, The Review plans to continue this page for the next several months in order to record information on M.I.T. men in the services which, to date, has been impossible to obtain. As a matter of convenience, promotions and corrections in the rank previously given are grouped under a single heading, "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

DECORATIONS

- 1917 Sullivan, William A., *Commo.*, U.S.N., Distinguished Service Medal.
- 1921 Johnston, S. Paul, *Capt.*, U.S.N., Legion of Merit — for his services with the bombing survey.
- 1924 Massari, Silvio C., *Maj.*, U.S.A., Legion of Merit — for exceptionally meritorious conduct in the performance of outstanding services in the tank-automotive branch, Chicago Ordnance District.
- 1930 Dixon, Marvin H., *Col.*, U.S.A., Legion of Merit — for materially contributing to the effective advance planning for Lend Lease and civilian supply shipments.
- 1931 Mesick, Benjamin S., *Col.*, U.S.A., Legion of Merit — for outstanding services as Ordnance Officer, advance section, Communications Zone, European Theater of Operations; Oak Leaf Cluster to Legion of Merit — as Chief of the enemy war materials branch he was charged with the implementation of intergovernmental agreements to permit the rapid return of material which was the property of the authorities for citizens of liberated nations; Order of the British Empire; Croix de Guerre with Palm.
- 1935 Eng, Jim, *Lt. Col.*, U.S.A., Bronze Star — for meritorious service, Salween River Campaign, Yunnan, China; Yun Hui Banner Medal (China).
- 1938★Paige, Walter H., Jr., *Pfc.*, U.S.A., Purple Heart — posthumously.

NEW LISTINGS

U.S.A.

- 1938 Kusaka, Shuichi, *T.4.*
- ★Paige, Walter H., Jr., *Pfc.*
- 1939 Goodheim, Harold, *Corp.*
- 1941 Wolf, Victor M., *Capt.*
- 1943 Clapp, Charles M., *Pvt.*
- Ignacio y Soriano, Krause A., *Maj.*
- 6-45 Clement, Robert C., *Sgt.*
- 2-46 Church, Theodore H., *Pvt.*
- Morgan, Henry M., *T.5.*
- Weaver, William H., Jr., *Lt.*

U.S.N.

- 1916 Richmond, Isidor, *Comdr.*
- 1922 Gross, Donald I., *Lt. Comdr.*
- 1924 Cates, Vincent K., *Comdr.*
- 1930 Thomson, Godfrey E., *Lt.*
- 1939 Arentson, Robert W., *Lt. Comdr.*
- Hunsaker, James P., *Lt. (j.g.)*
- 1940 Booth, Charles T., *Comdr.*
- 2-46 Arnold, Max E., *Ens.*
- Engle, Edmund, *Ens.*
- Kaufman, Herman, *E.T.M.2c.*
- Klubock, Morse H., *R.T.M.2c.*
- Schultz, Douglas L., *Ens.*
- Smith, Colon H., *Ens.*
- Stahr, Henry I., *Ens.*

U.S.C.G.

- 2-44 Gerde, Clifford S., *Comdr.*

BRAZIL

Navy

- 1942 Coelho de Souza, David O., *Lt. Comdr.*

CHINA

Army

- 2-46 Wang, Cheng C., *Capt.*

CHANGES IN RANK

U.S.A.

- 1911 Gaillard, D. P., *Lt. Col. to Col.*
- 1914 Green, Thomas H., *Col. to Maj. Gen.*
- 1917 Mackler, Max J., *Lt. Col. to Col.*
- 1918 Biggar, Walter T., *Capt. to Maj.*
- Braaten, Ingvald, *Maj. to Lt. Col.*
- 1919 Butler, James H., Jr., *Lt. to Capt.*
- 1921 Delany, Edwin F., *1st Lt. to Maj.*
- Scott, Stanley L., *Brig. Gen. to Maj. Gen.*
- 1922 Robb, Russell, *Lt. Col. to Col.*
- 1925 Doucette, Myron E., *Lt. Col. to Col.*
- Mabley, Carlton R., Jr., *Lt. Col. to Col.*
- Williams, Henry W., *Lt. Col. to Col.*
- 1926 Bittner, Guy C., *Lt. Col. to Col.*
- 1927 Spurr, Jerome L., *Maj. to Lt. Col.*
- Ward, E. Warren, *Capt. to Maj.*
- 1928 O'Hearn, Joseph A., *Maj. to Lt. Col.*
- 1930 Foster, Robert J., *Maj. to Lt. Col.*
- Hughes, Daniel J., *Maj. to Col.*
- Orfanos, Constantine G., *Lt. to Capt.*
- 1931 Goodhand, O. Glenn, *Capt. to Maj.*
- Hassett, Waman S., *Maj. to Lt. Col.*
- Roddy, Gilbert M., *Lt. Col. to Col.*
- 1932 Brown, John J., *Maj. to Lt. Col.*
- Devlin, Parker H., *Capt. to Maj.*
- Robson, James J., *Maj. to Lt. Col.*
- 1933 Shaw, Walter A., *Lt. Col. to Col.*
- Smilg, Benjamin, *Maj. to Lt. Col.*
- 1934 Read, Walter F., *Maj. to Lt. Col.*
- 1935 Eng, Jim, *Maj. to Lt. Col.*
- McMath, Hugh L., *Capt. to Maj.*
- 1936 Peel, Arthur R., *1st Lt. to Capt.*
- Skidmore, Wilbur M., *Lt. Col. to Col.*
- Walker, John S., *Maj. to Col.*
- Werblin, David A., *Maj. to Lt. Col.*
- 1937 Berg, Quentin, *Lt. to Lt. Col.*
- 1938 Iwatsu, Peter O., *Lt. to Capt.*
- 1939 Courland, Raphael H., *2nd Lt. to 1st Lt.*
- Fabacher, Lawrence J., *Capt. to Maj.*
- Griffin, Thomas F., Jr., *Lt. to Capt.*
- Guy, C. William, *Maj. to Lt. Col.*
- 1940 Hutson, William M., *Capt. to Maj.*
- Pach, Leo, *Pvt. to Corp.*
- Simpson, Willard E., Jr., *Capt. to Maj.*
- 1941 Cole, Frederick J., *Maj. to Lt. Col.*
- Hasert, Chester N., *Lt. to Capt.*
- MacLeod, John H., Jr., *Capt. to Maj.*
- Nolen, Jake T., *Capt. to Maj.*
- 1942 Crockett, Allan A., *Maj. to Lt. Col.*
- 1943 Milman, Alan M., *2nd Lt. to 1st Lt.*
- Young, Henry T., *1st Lt. to Capt.*
- 2-44 Schmitz, Andrew J., Jr., *2nd Lt. to 1st Lt.*
- 10-44 Fowle, Arthur A., *Pvt. to Lt.*
- 2-46 Chandler, Robert E., *Pvt. to Pfc.*
- Spitz, Peter H., *Pvt. to T.5.*
- Whitman, John E., *Pvt. to Sgt.*
- Wittenauer, Robert H., *Pvt. to T.4.*

U.S.N.

- 1918 Strang, Peter M., *Lt. to Lt. Comdr.*
- 1919 Paulsen, Carley H., *Comdr. to Capt.*
- 1921 Bugbee, L. Willis, Jr., *Lt. Comdr. to Comdr.*
- 1922 Kitts, Willard A., *3d, Rear Adm. to Adm.*
- 1923 King, Harvey M., *Lt. Comdr. to Comdr.*
- Morgan, Jasper, *Lt. to Lt. Comdr.*
- 1925 Haase, Louis, *Lt. to Comdr.*
- 1926 Franklin, William R., *Lt. Comdr. to Comdr.*
- Magruder, William H., *Lt. to Capt.*
- 1927 Ingram, Henry A., *Comdr. to Capt.*
- 1928 Houpius, John G., *Lt. Comdr. to Comdr.*
- Keyes, M. Waldo, *Lt. (j.g.) to Lt. Comdr.*
- Willett, James G., *Lt. Comdr. to Comdr.*
- 1929 Bartlett, Willard F., *Lt. to Lt. Comdr.*
- Southerland, Louis F., Jr., *Lt. Comdr. to Comdr.*
- 1930 Burkhead, Lingurn H., *Lt. to Comdr.*
- Gilbert, Ward C., *Comdr. to Capt.*
- Gray, William C., *Lt. to Lt. Comdr.*
- Poole, Harry W., *Lt. Comdr. to Comdr.*
- Rypinski, Robert B., *Lt. (j.g.) to Lt. Comdr.*
- 1932 Conrad, Robert D., *Lt. to Capt.*
- 1933 Spiller, John H., *Lt. Comdr. to Capt.*
- 1934 Barry, Peter, *Lt. Comdr. to Comdr.*
- Burwell, John T., Jr., *Lt. to Comdr.*
- Farrin, James M., Jr., *Comdr. to Capt.*
- Jones, William T., *Lt. to Capt.*
- 1935 Hawkes, William M., *Lt. to Comdr.*
- Madden, Robert C., *Ens. to Lt. (j.g.)*
- 1936 Mayo, C. Arthur, Jr., *Lt. (j.g.) to Lt. Comdr.*
- Romberg, Albert K., *Lt. to Comdr.*
- 1937 Blue, E. Morse, *Lt. Comdr. to Comdr.*
- 1938 Benson, James F., *Comdr. to Capt.*
- Des Jardins, Paul R., *Lt. (j.g.) to Lt. Comdr.*
- 1940 Brady, Philip G., *Cadet to Ens.*
- Dodge, Harry B., *Lt. to Capt.*
- Dodson, Joseph E., *Lt. Comdr. to Capt.*
- Feldman, J. B., *Ens. to Lt. (j.g.)*
- McQuilkin, John H., *Lt. Comdr. to Comdr.*
- 1941 Denslow, Jerry, *Lt. to Lt. Comdr.*
- Ludwig, John W., *Lt. to Lt. Comdr.*
- Slaughter, Guy W., *Lt. to Lt. Comdr.*
- Stein, Irving, *Ens. to Lt. (j.g.)*
- Winchell, Guilbert S., *Lt. to Lt. Comdr.*
- 1942 Gould, Richard H., *Ens. to Lt. (j.g.)*
- Lewis, Sumner D., *Ens. to Lt. (j.g.)*
- 1943 Clark, Walter L., *3d, Lt. (j.g.) to Lt.*
- Ferris, Henry D., *Ens. to Lt.*
- Gould, Gilbert B., *Ens. to Lt. (j.g.)*
- Johnson, Lewis K., *Ens. to Lt. (j.g.)*

- Kaneb, Willfred, *Ens. to Lt.*
- Kissinger, Ralph, Jr., *Lt. Comdr. to Comdr.*
- Maroni, Jacques R., *S.2c. to A.M.M.3c.*
- Schultz, Paul G., *Lt. Comdr. to Comdr.*
- Selke, William A., *Ens. to Lt. (j.g.)*
- 2-44 Adams, John H., *Ens. to Lt. (j.g.)*
- Childs, John N., Jr., *Ens. to Lt. (j.g.)*
- Gillen, Robert A., *A.S. to E.T.M.3c.*
- Hausman, John E., *Lt. Comdr. to Comdr.*
- Hayes, Vernon R., *Lt. to Comdr.*
- Hird, Martin C., *Ens. to Lt. (j.g.)*
- Nelson, Lawrence E., *Ens. to Lt.*
- Sonenshein, Nathan, *Lt. to Comdr.*
- Stryker, John E., Jr., *Ens. to Lt. (j.g.)*
- 10-44 Heuer, Charles H., *S.1c. to E.T.M.1c.*
- Leffler, John M., *S.1c. to E.T.M.2c.*
- Lockwood, Howard S., *S.1c. to E.T.M.3c.*
- Maffei, Richard, *S.1c. to Ens.*
- Tower, Archie, *Lt. to Lt. Comdr.*
- 6-45 Barrabee, James M., *S.1c. to E.T.M.2c.*
- Carroll, Francis L., *A.S. to Ens.*
- Cohen, David B., *Mid. to Ens.*
- Donohue, Robert T., *R.T.3c. to R.T.1c.*
- Wittmann, William C., Jr., *A.S. to Ens.*
- 2-46 Bigelow, Robert O., *R.T.2c. to E.T.M.2c.*
- Erlandson, Robert E., *S.1c. to E.T.M.3c.*
- Fitch, John T., *R.T.3c. to E.T.M.2c.*
- Moore, Merrill D., *A.S. to Ens.*
- Stevens, Frank R., *A.S. to Ens.*
- Stone, Alan D., *R.T.2c. to E.T.M.3c.*
- Wales, Robert L., *R.T.3c. to E.T.M.2c.*

U.S.C.G.

- 2-44 Garrison, James A., *S.2c. to Ens.*
- 6-45 Parkhurst, Robert D., *Cadet to Ens.*

U.S.M.C.

- 1940 West, Eugene S., *Lt. to Capt.*
- 10-44 Hanstein, Walter, *Pvt. to 2nd Lt.*
- 2-46 Eberly, David A., *Sgt. to S.Sgt.*

CANADA

Army

- 1933 Winters, Robert H., *Maj. to Lt. Col.*

CASUALTIES

- 1927 *Cuthbertson, Harry B., *Lt. Col., U.S.A.*
- 1938★Guttel, John, *Lt., U.S.A.*, — was missing in action since August 21, 1943. The War Department has put date of death as January 12, 1946.
- ★Paige, Walter H., Jr., *Pfc., U.S.A.*
- 1941★Schaeffer, Richard T., *Lt., U.S.N.*
- 2-46★Johnson, Russell W., *U.S.A.*, — previously reported missing in action.

★ Killed in Action

† Missing in Action

‡ Prisoner of War

* Died or Killed in Service

** Wounded

ALUMNI AND OFFICERS IN THE NEWS

Tiptop Talk

¶ By KARL T. COMPTON, President, on "Atomic Energy" at the annual meeting and dinner of the Engineering Societies of New England in the Boston City Club on April 23.

¶ By CLAUDE E. PATCH '02, illustrated with kodachrome slides of Maine, under the title "Friendship in a Camera," before the Engineering Association of Hawaii, and at the Library of Hawaii in Honolulu on May 1.

¶ By LAURIN ZILLIACUS '16 on "Education Today in the International Scene" at the regional conference of the American Education Fellowship in Boston on May 3-4.

¶ By BERNARD S. COLEMAN '19, entitled "Let Arms Yield to the Gown," at the annual meeting of the Wyoming Tuberculosis Association in Cheyenne on May 4 and on "The Acceptance or Rejection of Referrals for Vocational Rehabilitation by State Agencies" at the annual meeting of the National Conference of Social Work in Buffalo, N. Y., on May 22.

¶ By ARTHUR R. ANDERSON '35, co-author with Cedric Ridgley-Nevitt of a paper on "Two Aspects of the Dynamic Launching Problems," presented on May 3 before the North East Coast Institution of Engineers and Shipbuilders of Newcastle-upon-Tyne, England.

¶ By ROBERT G. CALDWELL, staff, on "Recent Aspects of Inter-American Politics" before the students of Colby College, Waterville, Maine, on May 2.

Tit-tat, Too

¶ HUGH MACRAE '85, in 40 years of experimentation, has successfully developed a scheme of five crops for continuous year-round grazing in the South.

¶ CHARLES CAMSELL '09 has been awarded the Founders' Medal of the Royal Geographical Society for his contributions to geological and geographic science.

¶ MEADE BOLTON '16 designed the five-cent, John F. Stevens postage stamp issued on April 24.

¶ HENRY B. KANE '24 has added a new title to the Technology Bookshelf, *Thoreau's Walden, A Photographic Register*, Alfred A. Knopf, 1946.

¶ HARRY SCHECTER '39 completed this spring a 34,000-mile round-the-world flight in a specially instrumented B-17, studying atmospheric and precipitation static as related to Army Air

Forces radio communication and navigation equipment.

¶ HOWARD F. TAYLOR, staff, is the first recipient of the Peter L. Simpson Gold Medal of the American Foundrymen's Association.

Telltale Titles

¶ For KENNETH D. KAHN '15, editor of "Scalacs," the local section bulletin of the American Chemical Society.

¶ For WALTER J. BEADLE '17, Treasurer of the Du Pont Company.

¶ For JOHN W. BARRIGER, 3d, '21, President of the Chicago, Indianapolis and Louisville Railway.

¶ For FREDERICK S. BLACKALL, JR., '22, a director of the Federal Reserve Bank of Boston.

¶ For MAHADEVA L. SCHROFF '26, editor of the *Indian Pharmacist*, official organ of the Bengal Pharmaceutical Association, Calcutta, India.

¶ For GEORGE M. CUNNINGHAM '27, chairman of the southern California section, American Chemical Society.

¶ For WARREN W. WALKER '29, President of the Montclair Society of Engineers in New Jersey.

DEATHS

*Mentioned in class notes.

¶ EDWARD G. TABER '77, February 19.

¶ HARVEY S. CHASE '83, April 9.

¶ JAMES A. HISCOX '86, December 12.

¶ NATHANIEL T. VERY '87, May 8.

¶ HERMAN PARKER '89, April 3.

¶ VICTOR WINDETT '89, April 10, 1945.

¶ WILLIAM H. FENN '90, April 14.*

¶ WILLARD H. ROOTS '90, March 31.*

¶ REUBEN B. COLLINS '91, February 20.

¶ CHARLES N. FITTS '91, April 5, 1945.

¶ FREDERICK H. ROSE '91, January 19.

¶ JOSIAH C. NORCROSS '92, May 28.*

¶ FERDINAND T. SCHNEIDER '92, March 30.

¶ HENRY S. WEBB '92, February 22.

¶ FRANK E. BROWN '93, January 12, 1945.

¶ FREDERICK N. DILLON '93, June 9.

¶ WINTHROP P. TENNEY '93, May 18.

¶ WILLIAM E. PARNALL '94, January 12.*

¶ FRED L. STEARNS '94, March 21.*

¶ EDMUND D. BARRY '95, May 6.*

¶ MADISON M. CANNON '95, May 18.*

¶ FRANK C. SCHMITZ '95, March 28.*

¶ THOMAS F. J. MAGUIRE '97, May 12.*

¶ GEORGE D. HUNTINGTON '98, January 9.*

¶ PAUL F. JOHNSON '98, March 19.*

¶ S. FOSDICK JONES '98, March 29.*

¶ EDWARD D. KRAMER '98, March 21, 1945.*

¶ MINERVA A. LAING '98, January 12.*

¶ ALBERT E. SARGENT '98, February 5.*

¶ JAMES H. BATCHELLER '00, April 20.*

¶ REUBEN B. CLARK '01, April 3.

¶ ELLIS F. LAWRENCE '01, February 27.*

¶ HARRY W. MAXSON '01, October 31.*

¶ FRANK D. RASH '01, April 18.*

¶ ARTHUR H. SAWYER '02, April 21.

¶ CLIFTON C. EASTERBROOKS '04, February 9.

¶ ROY W. WASTCOAT '05, February 9.*

¶ ATTILIO H. CENEDELLA '07, January 15.

¶ STUART R. MILLER '07, May 20.

¶ GEORGE S. BRUSH '09, April 28.*

¶ RALPH L. BARTLETT '10, August 19.

¶ ALBERT J. BEACH '10, March 29.

¶ EARL J. W. RAGSDALE '10, February 24.*

¶ CURTIS C. WEBB '10, August 2.*

¶ GORDON W. ELDER '11, December 14, 1944.*

¶ RUDOLPH EMMEL '11, April 18.*

¶ LEE ETTING '11, March 13.

¶ RAYMOND JARRET '12, November 9.

¶ WILSON C. BROGA '14, January 15.*

¶ HUGH M. CAMPBELL '14, January 24.*

¶ THOMAS J. DUFFIELD '14, May 15.*

¶ REGINALD T. FRIEBUS '15, March 30.

¶ MARSTON HARDING '15, February 11.

¶ ARTHUR S. BEDELL '17, March 30.

¶ CLARENCE S. TIMANUS '18, March 12.*

¶ FRANCIS O. WYSE '19, September 15.

¶ HENRY O. FORREST '20, April 15.

¶ HOSEA H. SMITH '20, April 20.*

¶ DWIGHT BALDWIN '21, May 9.

¶ JOHN T. HULL '21, March 16.

¶ WHITFORD C. GILLIES '22, July 28, 1945.

¶ GERALD H. DE LUE '22, September 11.

¶ JOHN F. G. GUNTHER '23, March 21.*

¶ J. DUNCAN MACKENZIE '24, December.

¶ BAIRD SNYDER, 3d, '24, May 18.

¶ FRANK L. McDONOUGH '25, November 29, 1944.

¶ REINHARDT G. SABEL '33, February 24.

¶ JOHN K. MCWILLIAM '36, December.

¶ C. PADGETT HODSON '44, August.

¶ RICHARD P. GALE, JR., '45, April 9.

¶ CHARLES VESTAL, '45, in 1945.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Technology Club of Albany

With the members of the Schenectady club as guests, our Club held a dinner meeting in Albany at the Aurania Club on April 4. It was our great pleasure to have with us at this time Dr. Compton, President of the Institute. About 60 Alumni were present to greet Dr. Compton and hear him tell some of his experiences while devoting himself to the war effort. Although these were of great interest, of even more interest were the plans he reported whereby Technology may care for the immediate educational requirements of the returning veterans and for the development of the Institute to meet the growing needs of both the undergraduate and graduate groups. We are thankful that the Institute has Dr. Compton for its leader. His executive ability and foresight are "just what the doctor ordered." — GEORGE W. SCHABLE '30, *Secretary*, 158 State Street, Albany, N.Y.

Technology Club of Cincinnati

The annual meeting of the Club was held at the University Club on April 11. The meeting was called to order by the President, Kenneth A. Wright '19.

Our distinguished guest for the dinner was Dr. Compton, President of the Institute. He gave the Alumni a very interesting summary of his trip to the Pacific as chief of the Pacific branch of the Office of Scientific Research and Development. Dr. Compton also told of many interesting meetings with Alumni in the armed forces in Japan and the Pacific islands. Among the other special guests of the evening were William C. Compton, a cousin of Dr. Compton, and Brainerd A. Thresher, the father of Professor B. A. Thresher '20, Director of Admissions for the Institute.

The nominating committee proposed the following club officers for the ensuing year: President, Robert B. Schildknecht '30; Vice-president, Albert D. Loring '34; Treasurer, Oliver L. Bardes '21; and Secretary, George F. Schatz '30. A motion was made and seconded instructing the Secretary to cast a unanimous ballot for the election of the above officers.

Members present at the meeting on April 11 were as follows: Morten Carlisle '90, Moritz Sax '96, A. H. Pugh, Jr., '97, Rudolph Tietig '98, W. L. Rapp '00, W. B. Fogarty '04, E. C. Steinharter '06, H. D. Loring '07, F. W. Morrill '07, H. B. Luther '08, C. H. Spiehler '08, J. B. Stewart, Jr., '08, E. H. Kruckemeyer '11, C. R. Strong '11, W. V. Schmiedeke '12, W. S. Boynton '13, W. C. Purdy '13, C. F. Cellarius '16, M. S. Noyes '19, K. A. Wright '19, Lee Thomas '20, J. S. Rafferty '22, F. W. Spalding '22, E. S. Birkenwald '23, J. D. Cochrane, Jr., '23, O. E. Freidhof '23, J. C. Todd '23, A. C. Brown '25, F. J. Coughlin

'25, W. H. Hoar '26, D. E. Perry '28, W. W. Carter '29, G. F. Schatz '30, R. B. Schildknecht '30, Charles Straley '31, J. P. Tillinghast '31, B. M. Markstein, Jr., '32, S. J. Alling '33, S. I. Crew '34, A. D. Loring '34, W. J. Pucke '34, Edward Barber '35, J. S. Cort, Jr., '35, B. S. Freiberg '35, G. R. Maass '35, W. G. Seinsheimer '36, J. M. Freiberg '37, D. J. O'Connor, Jr., '37, John Sullivan, Jr., '38, R. V. Sternberg '39, G. E. Power '41, W. S. Bundy '42, R. P. Mork '43, J. A. Sibley '43, E. M. Jones '44, A. M. Margileth '44, P. L. Mitchell, Jr., '45. — GEORGE F. SCHATZ '30, *Secretary*, 705 Enquirer Building, Cincinnati 2, Ohio.

Detroit Technology Association

The presence of Dr. Compton made our fifth dinner meeting of this season the most outstanding success of recent years. On notification by Professor Charles Locke '96, the Association had arranged this dinner meeting to honor the occasion of the President's first postwar visit.

Messrs. Sutter '26, Martin '25, and Longyear '26, met and welcomed Dr. Compton when he arrived from Chicago and accompanied him to his quarters at the Detroit Club. We had arranged with the newspapers to meet their representatives at the Detroit Club before the dinner for a press interview. After this detail had been completed, Messrs. Sutter, Martin, Longyear, and Rutherford '28 accompanied our distinguished guest to the Detroit Boat Club, where he renewed his acquaintance with the gathered Alumni and met their guests. From 6:15 to 7:15 P.M., Dr. Compton greeted almost everyone present. After dinner, which was served at 7:15, memories of Cambridge were recalled by the singing of the Stein Song and other M.I.T. melodies before the President of the Association, David Sutter, called upon various members of the organization for short reports. Allyne Litchfield '17 and Charles T. Ellis '17 spoke briefly on the subject of interviewing candidates for scholarships and admission to the Institute for the forthcoming fall term. B. E. Hutchison '09, who was chairman of the evening, then introduced C. E. Wilson of General Motors, Henry Ford, 2d, and R. McCarroll of the Ford Motor Company, and Fred Zeder of the Chrysler Corporation and recalled that this was the 15th anniversary of President Compton's first visit to Detroit to address the Alumni. On that occasion, also, Mr. Hutchison had introduced Dr. Compton.

Much could be written to outline the importance and significance of Dr. Compton's presence and his talk. It was most interesting to learn that everywhere Dr. Compton went on his special missions, Technology men were represented, either in our armed forces or in the citizenry of the countries visited. It was strikingly demonstrated that the influence of the Institute has reached around the world. One could not help but feel a heart-warming glow

at this broad diffusion of the precepts of education gained in Cambridge. We heard of the expanded plans which Technology proposes to incorporate in forthcoming educational programs and could feel that same glow of pride in realizing its progressive leadership in science and education, secure in the knowledge that the Institute is going forward, prepared to meet all eventualities. Promptly upon completion of Dr. Compton's speech, Chairman Hutchison called the meeting to a close to obviate the lengthy question period of an open forum and spare Dr. Compton for the rigors of his tour and forthcoming government assignments. — THOMAS F. MORROW '35, *Secretary*, 16894 Birwood Avenue, Detroit 21, Mich.

Technology Club of Hartford

Our annual meeting and ladies' night turned out to be a most successful affair in spite of the fact that it was necessary for this reporter to preside in the absence of the President and Vice-president. An excellent dinner at the Elm Tree Inn in Farmington was enjoyed by the 54 members and guests, and we are pleased to report that 23 women attended, a record-breaking number.

The business meeting was agreeably short as a result of the absence of standing committee chairmen and the spontaneous motion and vote to accept the Secretary-Treasurer's report as on record in his little black book without recitation. A report of the nominating committee, composed of F. P. Ward '26, chairman, J. Henry L. Giles '29, and Thomas D. Green '26, was then received. The officers nominated and unanimously elected were as follows: Norman J. Vile '16, President; J. P. F. Pilkington '27, Vice-president; John A. Swift '27, director for two years; Malcolm G. Wight '06, nominee for Alumni Council representative; Franklin S. Atwater '38, Secretary; Louis Proulx, Jr., '36, Treasurer; and F. T. Crossley '10 as class representative for the '10 to '20 decade, all other representatives being re-elected. The last appointment was required by the departure of Harold McIntosh '19 during the year. It was then moved and voted that Roger Davis '12 head a committee of his own choosing to prepare a revision of our sadly outmoded constitution. Frank Atwater, who is general chairman of the outing committee, then announced progress being made on plans for the joint outing to be held with the New Haven club on June 8. The members were admonished that attendance at Alumni Day in Cambridge would be the only acceptable excuse for not coming to the outing.

Business over, our guest speaker, Walter A. Dew, consultant, public relations department of the Du Pont Company, was introduced. Dr. Dew delivered a very interesting talk on "The Expanding Chemical Industry," illustrated with a large variety of exhibits of new materials. His remarks were very well received by the ladies pres-

ent, who displayed an understandable interest in nylon. — LOUIS J. PROULX, JR., '36, *Secretary*, 31 Wells Road, West Hartford 7, Conn.

Indiana Association of the M.I.T.

The May meeting, which was the last one for this spring, was held at the Apex Grill, 129 East 16th Street. Sixteen members and three guests, including the speaker, were present. After an excellent roast-beef dinner, President Harvey '28 called the meeting to order. He asked Frank C. Balke '14 to report on the reemployment of the returning servicemen. Frank reported that he had had only one application, and that it was a recent one. This had desired work of a chemical nature for the coming summer. President Harvey stated that this meeting would conclude his term as president of the Club. He had enjoyed the work, and he thanked the officers who had helped him.

J. Lloyd Wayne, 3d, then introduced Emmett C. Belzer, display manager of the Indiana Bell Telephone Company, whom he had secured to talk to the Club. Mr. Belzer traced the development of the telephone from its invention by Alexander Graham Bell, to the present efficient combined receiver-transmitter. There are 93 million telephones in the world, he told us. The messages are transmitted in many ways, from single wires to cables holding 2,100 pairs of wire. The telephone company is continuously endeavoring to improve its services and carry the tremendously increased amount of business. Long-distance communication is now made possible by amplifier tubes. A new coaxial conductor is being developed which can carry hundreds of messages or television programs. Experiments are being carried on for transmitting messages both by conductor and by radio and radar.

Mr. Belzer presented a sound picture of the Bell Telephone Hour. Besides the delightful entertainment, this revealed the detail which is necessary to carry on this broadcast. Instruments were shown and demonstrated which could be used in airplanes or by the hard of hearing and make it possible for one to "talk through one's hat." The last feature was the demonstration of an instrument which recorded the voice on a steel tape by magnetization. All the club members recorded their speech and then heard the sound of their own voices reproduced — and in short thoroughly enjoyed Mr. Belzer's demonstration.

The following members were present: J. W. Stickney '96, J. Lloyd Wayne, 3d, '96, F. C. Balke '14, G. P. Allen '16, J. H. Babbitt '17, H. C. Karcher '25, S. C. Boyle '27, R. C. Wallace '27, T. G. Harvey '28, Russell Fanning '30, G. W. Klumpp '30, W. S. Roberts '32, S. H. Hopper '33, C. L. Boucard '36, G. E. Holbrook '39, G. J. McCaul '40. — JOHN H. BABBITT '17, *Secretary*, 3734 Carrollton Avenue, Indianapolis 5, Ind.

Technology Club of New Hampshire

At a meeting held at the Nashua Country Club on May 15 a group of 34 sat down to one of Peter's superb steak dinners. The

Alumni Secretary, Professor Charles E. Locke '96, brought with him, from Cambridge, E. L. Moreland '07, J. R. Killian '26, and S. C. Prescott '94. Henry Worcester '97 came up from Boston and brought Ralph Jope '28.

Carl A. Hall '08, President, appointed a nominating committee which presented the following names: for president, Robert C. Erb '17; for vice-presidents, Blaylock Atherton '24 for Nashua, A. R. Holden '23 for Manchester, and H. E. Langley '19 for Concord; for secretary-treasurer, E. A. Greenleaf '18 of Hillsboro; and for representative to the Alumni Council, H. B. Mitchell '32. These candidates were declared duly elected.

President Hall then asked Charlie Locke to act as master of ceremonies, which he did in his own inimitable style. All went well until the group failed to see the point in his best story. He then called on Jim Killian, who gave a vivid word picture of conditions at the Institute in the reconversion period, concluding with the statement that the abnormal conditions of today would probably be the normal of tomorrow. Dean Moreland gave a graphic description of his trip to the Pacific shortly after the end of the war. In his easy conversational style he recounted what he saw and heard, and drew some conclusions. He talked for more than an hour, yet the crowd was sorry when he sat down.

The following Technology men were present: H. J. Bickford '23, W. P. Boynton '31, E. R. Burling '30, W. D. Davol '06, R. C. Erb '17, E. A. Greenleaf '18, C. A. Hall '08, L. C. Hall '35, L. S. Hall '14, S. L. Hall '43, A. R. Holden '23, C. G. Holt '17, S. P. Hunt '95, R. T. Jope '28, J. R. Killian '26, H. E. Langley '19, C. E. Locke '96, M. C. Mackenzie '14, M. P. Meyer '22, H. B. Mitchell '32, J. H. Moore '40, E. L. Moreland '07, J. B. Myrick '42, C. L. Nutting '19, Philip O'Neil '42, V. S. Phaneuf '21, S. C. Prescott '94, J. P. Rich '30, A. O. Roberts '04, H. D. Swift '15, M. A. Wight '40, and Henry Worcester '97. — MALCOLM C. MACKENZIE '14, *Secretary*, Derry Village, N. H.

M.I.T. Club of South Florida

The Club met on May 2 at the home of Fred Zurwelle '20 on Miami Beach. A delicious barbecue supper was served. The meeting was then held by lantern light on the lawn. President Mandell '21 discussed the role of the Club in the postwar era, including the establishment of an area placement committee and the growing importance of this type of work as a club function. The problem of admission of new students to Technology, in view of the extremely large number of applicants, also was discussed. A nominating committee was appointed to name members of an area placement committee, and also to arrange a slate of new club officers, both matters to be considered at the next meeting. Arrangements were made for the club members, wives, and guests to make a trip to Fort Lauderdale on May 25 to visit the hibiscus gardens of F. S. Anderson '04, who will also entertain the group at supper. The Club has been looking forward to this trip as a real treat and is grateful to Captain Anderson for his invitation.

Present at the May meeting were the fol-

lowing: F. S. Anderson '04, M. A. Baskin '34, H. R. Gamble '26, S. A. Hooker '97, A. B. Kononoff '29, M. N. Lipp '20, E. I. Mandell '21, J. J. Ostlund '35, C. W. Orleman '31, R. L. O'Donovan '27, D. D. Peene '29, Bernard Ross '37, G. E. Sakrison '29, C. P. Thayer '23, H. L. Weinstein '26, D. S. Whitmore '45, and F. E. Zurwelle '20. Guests present were B. A. Kononoff, father of Alexis Kononoff, and Leon Sirkin, prospective M.I.T. student. — CLARENCE P. THAYER '23, *Secretary*, 4212 Northwest 6th Avenue, Miami, Fla.

M.I.T. Club of the Province of Quebec

Rejuvenated two years ago under the cochairmanship of S. C. Dunning '17 and Henri Gaudefroy '34, the Club was formally reorganized at a general meeting held on May 2 at the Windsor Hotel in Montreal. The move had been contemplated for some time and was brought about when Mr. Dunning had to leave Montreal, having been appointed general sales manager of Wesco Waterpaints, Inc., for both the United States and Canada, but with headquarters in East Boston. The reorganization took the form of the adoption of a constitution and by-laws and the election of an executive committee, consisting of a president, a vice-president, a secretary-treasurer, and six councilors. The term of office of the president and vice-president is one year, whereas that of the secretary-treasurer and councilors is three years, the councilors being replaced two by two every year. The following executive committee has been elected for the next year (May, 1946, to May, 1947): President, Paul Kellogg '11; Vice-president, Henri Gaudefroy '34; Secretary-Treasurer, Jacques Laurence '40; Councilors, term expiring in 1949, Harold C. Pearson '23, and François P. Rousseau '27; term expiring in 1948, Huer Massue '15, and A. T. Eric Smith '21; term expiring in 1947, Jean M. Raymond '34, and Alfred N. Miller '39.

The Club was organized to group all persons who have studied or taught for at least one term at Technology and who live in the province of Quebec or in the eastern part of the province of Ontario. The Club now lists 135 members, of whom 111 live in Montreal or its suburbs. All M.I.T. Alumni who reside within the boundaries of the Club and are not on its mailing list should get in touch with the Secretary-Treasurer, whose name and address appear below. — JACQUES R. LAURENCE '40, *Secretary*, 1820 St. Joseph Boulevard, East, Montreal 34, Quebec, Canada.

Technology Club of New York

During the month of April there was considerable activity in this section. We had the honor of welcoming to our active membership the following: Zach S. Cowan, Jr., '44, George B. Hetrick, Jr., '45, Joseph M. Livermore '15, Clarence W. Perkins '22, Herbert Rees Schwarz '34, and H. Gregory Shea '24. Without making a thorough check, it looks as if George Hetrick may hold the honor of being our youngest graduate. Great stuff, George, and I hope we can get many more from the younger classes in line. Through circumstances beyond his control, we have lost G. Edward Nealand

'32 by resignation. Here's hoping you can join us again someday, Ed. Among the visiting firemen are some new names, which I cite herewith: W. H. Callahan '26, W. H. James '40, J. K. Pickard '41, P. B. Sadler '06, and K. W. Winsor '37.

As of this date, three classes have held luncheons or dinners at the clubhouse during April and May. On April 30, the Class of 1927 gave an excellent dinner party to which a large turnout responded. Bob Bonnar '27, in his usual indulgent manner, asked your Secretary to attend "on the class," and I enjoyed doing so tremendously. Some 18 or more 1927 men attended, including Ed Bemis, Bob Bonnar, Jim Castner, Chippin Chase, George Flynn, Ray Hibbert, Whit Hutchison, Glenn Jackson, Joe Melhado, Dan Metzger, Jake Rabinovitz, Don Spitzli, Frank Staples, Charlie Sweet, Russ Westerhoff, and Les Woolfenden. George Flynn told of his foreign travels; Glenn Jackson showed slides and described his trip to Russia and Germany with the Quartermaster Corps. This meeting struck me as one of the best ever.

The Class of 1924 has been putting on steam lately and has had one luncheon and one dinner meeting. There was another luncheon party at the Bankers Club on May 27, for all the work on which we are indebted to Pret Littlefield '24. Ed Wininger '24 and Anatole Gruehr '24 took the initiative for the luncheon, at which we had about 10 classmates from all parts of the city. I used Bill Robinson's trip from Cleveland as an excuse for the meeting on May 17th. Because of *Power's* biannual sales meeting, I had to leave early and can't pass on much of the discussion, but the following '24 men attended: Paul Cardinal, Dave Evans, Anatole Gruehr, Ray Hamilton, Mal McNaught, Frank Manley, Tom Mattson, Bill Robinson, Nat Schooler, Greg Shea, George di Somma, and I. Several others were supposed to come, but forgot it or got tied up in other directions. It was decided to restrain our enthusiasm for our 25th reunion and to provide a room at the Statler Hotel for any of the gang who may attend the festivities on June 8.

Although I have none of the details, I happen to know that the classes of 1909 and 1933 also had luncheons or dinners and will try to get more information on these — which leads to my usual commercial: Will all classes holding affairs at the clubhouse or otherwise, please be good enough to give me a few details for this column?

By the time you read this, we shall have held our annual spring outing at Lawrence Farms, Mount Kisco, N. Y. Thursday, June 27, is the day, and we are all looking forward to some real fun. We are anxiously anticipating the plans for next fall, more of which you will get either here or by mail. And according to Fred Allen, as the dollar dinner said to the glutton when he sat down, "I'll be gone in a minute." If you pass through New York on your vacation drop in at the clubhouse. — WILLIAM W. QUARLES '24, Secretary, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York 18, N. Y.

Technology Club of Philadelphia

Eighty Technology Alumni and their guests renewed friendships around the punch bowl in the delightfully pleasant

banquet room of the University Club on May 21. They had come especially to see and hear Professor E. H. Schell '12 of Technology and two Philadelphia Alumni, H. W. Jones '26 and R. E. Worden '36, conduct a management symposium. The banquet room is situated on the 13th floor and provides an unusual panorama of the city. The late-afternoon sunshine streaming through the windows glistened from many a brand new service discharge button, although here and there brass buttons and braid were still in evidence. For the first time in five years, recent graduates were present in good number. Small-scale reunions were held by '32 and '41 men, both groups having a full table for dinner.

President Anderson '15 started the after-dinner proceedings with an announcement that the committee on regional scholarship awards for Philadelphia had held a dinner meeting at the Racquet Club on Thursday evening, May 9. From our Club, Greville Haslam '15, who is chairman, Dean Lobdell '17, and Associate Dean Pitre from the Institute, together with Philip M. Alden '22, Herbert W. Anderson '15, Edward J. Healy '23, and Charles W. Stose '22, were in attendance. During the evening nine applicants had been interviewed by the committee, and several outstanding young men were given consideration. Announcement of the winner will be made at a later date by the Institute. Each year, for many years, Technology has awarded a regional scholarship covering one full year's tuition to the most outstanding and worthy student qualifying for entrance to the Institute from this region. This award has been made by the selection of the scholarship committee, which is made up of members of our Club.

President Anderson then called on Edward J. Healy, chairman of the Club's placement planning and guidance committee. Ed emphasized that his committee can function well only if it is aware of all employment possibilities for Tech men in the Philadelphia area, and he urged all local Alumni to inform the committee of openings which could be filled by a Tech man to his and to his employer's mutual benefit. The response to this request has been very gratifying.

It was with great pleasure that we learned of the promotion of Walter J. Beadle '17 to the offices of vice-president and treasurer of E. I. du Pont de Nemours and Company. Congratulations, Walter! Norman F. O'Shea '30 reported that Francis A. Lutz '31, our former member and song leader, is now out of the service and back in his family's lumber mill business in Brooklyn, N. Y. Before discharge, he was promoted from the rank of major to that of lieutenant colonel in recognition of a job well done in ordnance. George Dandrow '22, President of the Technology Club of New York and Vice-president in charge of sales for Johns-Manville, extended his best wishes to our members through Earle S. Bates '24. Wendell Currier '31 reported that our friend and former Treasurer, Hal L. Bemis '35, has recently become manager of the Campbell Soup Company's Canadian division on his discharge from the service.

With the miscellaneous business completed, President Anderson turned the meeting over to our Vice-president, Wendell N. Currier '31, who served as toast-

master. Wendell first introduced Robert E. Worden '36, who has been engaged in management activities with the Campbell Soup Company, John I. Thompson and Company, and most recently with his own firm of Worden and Risberg, management consultants. Bob discussed the principles of good industrial management, which require that business planning and control be executed by men who think clearly, get along with people, are willing and able to assume responsibility, and possess unbounded energy. Good management was stressed as being essential for the furtherance of a free economy.

Henry W. Jones '26, manager of industrial relations for the Atlantic Refining Company and wartime district director of the Training Within Industry program, was next introduced, to speak on the subject of "Supervisory Training." To be worth while, any training program must be understood, must be accepted by the trainee, and, most important, must be put to use. Dick recommended that extraneous material be eliminated and that the program be designed exclusively for the trainee's maximum benefit. An important, but sometimes neglected, part of a training program is the evaluation of results which should be used continually for the modification and improvement of training procedures.

Professor Erwin H. Schell '12, Head of the Department of Business and Engineering Administration at Technology, came down from Cambridge to deliver another of his popular talks to the Philadelphia Alumni. We were first entertained by a "stroll" with Professor Schell around the Institute, in which he outlined some of the physical and some of the less tangible changes which have occurred there during the conversion to peacetime operation. As we have come to expect, his talk was embellished with many humorous anecdotes. The latter part of Professor Schell's talk was devoted to a number of illusions besetting many Americans today. Although he did not attempt to answer the illusory problems concerning such things as labor-management relations, government in business, the long-range outlook for free enterprise, and general world conditions, Professor Schell did present a most refreshing point of view and many thought-provoking ideas. His remarks concluded the evening's unusually interesting program by three speakers who had provided practical, helpful ideas for which there are many applications in everyday work.

The following Alumni were in attendance: 1902: C. B. Annett; 1905: C. A. Anderson, Renshaw Borie, F. J. Chesterman; 1907: H. W. Mahr; 1912: C. L. Gabriel, E. H. Schell; 1913: R. W. Weeks; 1915: H. W. Anderson, L. H. Bailey, E. A. Whiting; 1916: Mark Aronson, O. B. Pyle; 1917: Garland Fulton, O. F. Goldsmith, Francis Goodale, Kenneth Harper; 1918: O. D. Burton, C. A. Lindgren, Jr.; 1919: H. F. Marshall; 1921: J. E. D. Clarkson; 1922: H. S. Dimmick, Joseph Greenblatt, C. W. Stose, L. S. Vadner; 1923: E. M. Goldsmith, Jr., E. J. Healy, E. S. Pomykala; 1924: E. S. Bates, W. C. Ridge; 1925: R. E. Cernea, C. B. Weiler; 1926: M. J. Bergen, H. W. Jones, M. B. Morgan, R. W. Richardson, W. E. Vaughan, F. E. Washburn; 1928: R. M. Harbeck; 1929: G. T. Logan,

R. K. Miller; 1930: R. P. Crowell, H. J. Mulvey, N. F. O'Shea, J. W. Patton; 1931: W. N. Currier; 1932: E. F. Anderton, E. E. Burritt, F. S. Chaplin, John Lawrence, E. B. McBride, M. T. Meyer; 1933: C. W. Farr, C. E. Miller; 1934: Proctor Wetherill; 1935: W. H. Brockert, G. R. Bull, Jr.; 1936: A. A. Carota, J. A. Myers, R. E. Worden; 1938: J. H. Klaber; 1939: B. A. Kleinhof, G. H. S. Swan, F. W. Tobin, Jr.; 1940: J. W. Blattenberger; 1941: E. R. Ackerson, Stanley Backer, S. K. McCauley, H. R. Moody, J. S. Thornton; 1942: D. B. Grady; 1943: J. F. Hoey, Jr., E. C. Prival; 1945: J. T. Lester, Jr.; 1948: James Marshall; unclassified: K. V. Kratochvil.

Our next meeting will take place in the autumn at the Sheraton Hotel, 19th and Walnut Streets. The date is Tuesday, October 15, and although the program is still open, it is hoped that our old friend Dudley Bell '17 can be with us. Dud will be remembered by many members of the Club as a former president. Mrs. Bell assists Dud in an unusual demonstration of telepathy which can best be described in Dud's own words: "Whether our minds have the mechanism to communicate with other minds without resorting to speech, writing, radio, or some other signaling device, is a question which the scientific world has never settled. The name given to the idea is telepathy, although thought transference, and mind reading, are sometimes used. There is great disagreement among scholars. The majority seem to disbelieve in the possibility of telepathy, a number believe the subject merits further study, and some few are convinced that telepathy is a fact. My wife and I have been experimenting for some time. We are convinced that our demonstration will be interesting, and you will see apparent communication from one mind to another otherwise than through channels of sense. In short, ideas seem to be transmitted without using sight, touch, or hearing. We make positively no claims to supernatural ability, nor are we interested in professional entertainment. It is purely a hobby with us, and we like to give intelligent people something to think about." Make a note on your calendar now to be with us on Tuesday, October 15, whether you are a local or a transient Tech man.

For information about Alumni in the Philadelphia area, call JEFFerson 0642. — ROBERT M. HARBECK '28, *Secretary*, Fidelity Machine Company, 3908 Frankford Avenue, Philadelphia 24, Pa. *Assistant Secretaries*: SAMUEL K. MCCAULEY '41, 288 Copley Road, Upper Darby, Pa.; FRANK S. CHAPLIN '32, 822 Glendalough Road, Philadelphia 18, Pa.

M.I.T. Club of Western Pennsylvania

The fourth meeting of the Club for the year 1945-1946 was held on March 22 at the University Club. Our President, T. W. Bossert '20, was unavoidably absent and in accordance with the procedure outlined in the new constitution, R. G. Lafean '19 presided. After the reading and acceptance of the minutes of the previous meeting, C. M. Boardman '25 reported for the scholarship committee. He stated that because of the great influx of returned veterans and other factors, the Institute is no longer accepting additional students for advanced standing.

Mr. Lafean announced that on account of a change in Dr. Compton's schedule, his visit to Pittsburgh would be delayed until June 13. Accordingly, it was decided that the next meeting, originally scheduled for May 2, but later postponed to May 20, would be considered the annual business meeting for election of officers and transaction of other business. A nominating committee would be appointed by the board of governors to make the required nominations for vacancies to be filled among the elected officers of the Club. These would include a new president for the coming year as well as three members of the board of governors for three-year terms.

Herbert H. Hall '14, chairman of the program and entertainment committee, introduced Sumner B. Ely '92, professor emeritus of the Carnegie Institute of Technology and superintendent of the Pittsburgh Bureau of Smoke Prevention, who spoke on the very timely topic of "Smoke Control for Pittsburgh and Allegheny County." Professor Ely had addressed our group two years before on this subject, and his authoritative talk on this occasion brought us up to date. Those present included the following: S. B. Ely '92, H. L. Lang '09, M. A. Grossman '11, P. V. Faragher '13, H. H. Hall '14, P. Y. Hu '17, D. B. Demond '18, R. G. Lafean '19, H. W. McIntosh '19, E. M. Barnes '23, E. L. Chappell '24, C. M. Boardman '25, William Goodridge '26, M. M. Greer '26, W. C. L. Hemeon '26, C. T. Barker '27, H. L. Johnson '32, B. M. Hutchins '32, S. D. Miller '32, A. H. Munson '33, R. F. Miller '34, E. R. Millen '35, F. L. Current '37, J. G. Burke '38, S. C. Johnson '39, P. R. Toolin '39, M. P. Bearce '40, and R. S. Irvin '45. — HARRY L. JOHNSON '32, *Secretary*, 1215 Savannah Avenue, Pittsburgh 18, Pa.

The Technology Club of Rochester

Development of really practical commercial aviation is the most obvious application of radar, Lee du Bridge, dean of the University of Rochester, told the Club on March 6. Commercial aviation will not come of age until flights are made on a routine schedule comparable with railroad service. Cancellations, postponements, and rerouting because of unfavorable weather or other conditions are positive indications of aviation's infancy. Commercial planes could navigate by Loran, pick their course and fly around and through storms with radar, and make their landings under Ground Controlled Approach direction. No single air line could install such a system, however, and the necessary co-operation for government installation and operation of a system such as Loran, for example, disappeared with the end of the war.

The astounding success of the Radiation Laboratory in developing microwaves for military use during the war is in some respects a very great danger to the future of science, Dr. Du Bridge pointed out. It has given rise to the popular expectation that if only enough money can be appropriated, and enough men assembled, all our postwar problems can be solved! Two requisites for successful development made possible the Radiation Laboratory's success: (1) a clearly defined goal, and (2) a proper tool for reaching that goal. The pressing need for radar with greater accuracy and better

resolution provided the incentive for study of still shorter microwaves. The British-conceived magnetron furnished a proper tool and made possible and fruitful the development work at the Radiation Laboratory. Pure research in vast amounts is needed to solve most of our postwar problems because, even though the goal may be clear (as in the control of cancer), there is a great scarcity of promising tools. This pure research is not facilitated by large organizations and budgets, since it depends less upon elaborate teams than upon men with good ideas. There is no monopoly on these, Du Bridge said, and they may occur anywhere!

Nowhere else, he declared, but at Technology could the Radiation Laboratory have grown to such fruition. In his contacts with other similar projects, Du Bridge noted handicaps and inconveniences that hampered activities; every one of these was overcome successfully by the Institute under the leadership of Dr. Compton and Jim Killian '26. It was this favorable environment that permitted expansion of the Radiation Laboratory from an initial handful to a final staff of 4,000 and a corresponding multiplication of its contributions. No other organization is so well trained on how to get along with the government as is M.I.T., Du Bridge continued. The Institute thus gains an outstanding advantage in the postwar world, since increased government control of education and science is imminent and unavoidable.

Government control of science has been fostered by the misunderstanding and awe that surrounded wartime science. Already it is threatening to strangle the "goose that laid the golden egg." Pleading for a minimum government control, Du Bridge noted that even now fundamental research in nuclear physics and related fields is being suppressed in the cloud of secrecy surrounding the atomic bomb. Details of the bomb itself are justly secret, but the restrictions on a free interchange of ideas has so checked nuclear physics that little real progress has been made in the last four or five years. A major shortage of engineers with fundamental scientific training developed very early in the war, and it was necessary for the Radiation Laboratory to train a number of such men in its field. So successful was their combination of science and engineering that the Institute is preparing to meet this same challenge in its postwar training. A clear vision of this need for scientific engineers (in addition to practical engineers and theoretical scientists), together with experience in how to achieve this goal, will give Technology leadership in the postwar field of education.

Dean Du Bridge thoughtfully remained on hand to answer a number of questions and then dashed back to a welcoming party being given by the University of Rochester in his honor.

Speaking to a record attendance of 98, Dr. Compton reported on Institute developments before the Club on April 12. He traced the return to peacetime activities and outlined the major problems to be faced in the next few years. Dr. Compton was introduced by Edward S. Farrow '20, alumni term member of the Corporation. Seated at the head table were Alan Valentine, President of the University of Rochester, and Mark Ellingson, President of the

Rochester Institute of Technology. After a one-minute business meeting, Harold E. Akerly '10, Club President, introduced Ed Farrow, who mentioned some of the things Dr. Compton was too modest to say.

Spicing his remarks with anecdotes from the Pacific, Dr. Compton told of several encounters with Technology men during his service with the Pacific branch of the Office of Field Service. He attributed our success in avoiding uprisings and similar difficulties in Japan to the thorough discipline of the Japanese. They are like feudal peasants, with so little stake in imperial Japan that they are not much concerned over who governs them so long as their own welfare does not suffer. The interrogation of Japanese scientists was a rather easy job that could be arranged by the Japanese authorities themselves, Dr. Compton found, so long as no more than 40 men a day were requested. A cabinet officer was designated to bring these men in for questioning and, given three days' notice, he brought them in from anywhere in Japan.

Housing at the Institute presents one of the more difficult problems to be solved since present dormitories and fraternities provide for only 3,000 men, including the normal ratio of commuting students. An additional 1,500 must be quartered in temporary facilities, and the Institute is now negotiating for surplus housing from some of the shipyard areas. A new dormitory to house 300 is planned west of Massachusetts Avenue. Walker Memorial, the V-12 Dining Room, and the Armory could be used as last resorts.

A maximum enrollment of 4,500 will be made possible, Dr. Compton reported, by temporary simplification of scheduling and elimination of nonessentials — a process requiring only the slightest compromise with quality. A faculty survey has indicated that under later conditions of normal operation the present Institute facilities will provide for 3,500 students (1,000 graduates and 2,500 undergraduates). This slight increase over the pre-war maximum has been made possible by new facilities constructed during the war. An arbitrary quota system which limits foreign students to the seven and one-half to eight per cent of the student body that they composed before the war and which limits the enrollment of the Army and Navy officers to 25 per cent of the graduate school, has been necessary in order to provide for American civilian students. So overpowering has been the flood of applications, at times mounting to 4,000 a week, that 52 staff members are now assisting Professor Thresher by devoting 10 hours a week each to interviewing prospective students.

Availability of the Alumni Pool during the war was a godsend to the Institute, Dr. Compton said, since after the encroachment of war activities in Walker, Barbour, and elsewhere, it provided the only possible athletic recreation aside from marching in the mud! Construction of a new gymnasium-auditorium building is included in the \$9,500,000 expansion program recently authorized by the Corporation. This new building is to be located west of Massachusetts Avenue, since it now appears that all the available land surrounding the main buildings should be reserved for educational purposes. Plans for the gym-

nasium-auditorium are to be announced at the Alumni Day festivities on June 8.

Construction of one of the most modern libraries in the country is planned on the space between Walker Memorial and Building Two. These plans were developed by John Burchard, who was at Princeton on leave of absence during the war, after what Dr. Compton called the most thorough study of libraries to date. In co-operation with the Princeton librarian, he began a survey college of libraries to determine how they now function and what improvements might be made. Before its completion, this survey was expanded to include men from 13 colleges who directed the actual progress of the work. In all, more than 70 colleges participated. Each of these institutions will take from the final report such items as are suited to its own needs.

Reconversion reserves will provide for the rearrangement of present facilities to a more logical use of the Institute's physical plant. This process will be governed by the anticipation of expansion in many departments. Only a few temporary structures must remain, Dr. Compton said, and even these will not last for 20 years!

The evening closed with unanimous agreement that it was the best Rochester meeting ever held! Among those who attended on April 12 were the following: Cecil Aronson '22, C. C. Beach '18, A. H. Bond '15, G. L. Calderwood '27, H. F. Carver '32, A. L. Cobb '26, Wells Coleman '37, G. L. Cox '30, C. C. Culver '96, Alfred Dasburg '36, E. W. Davis '21, G. S. Dundon '45, O. E. Dwyer '36, M. H. Eisenhart '07, E. S. Farrow '20, A. B. Fox '33, M. A. Freas '43, H. S. Gardner '30, J. S. Goldey '44, A. F. Hamilton '35, A. S. Hamilton, Jr., '35, W. L. Hamilton '26, Nelson Hansford '37, K. J. Heinicke '32, P. W. Hellige '42, F. J. Hopkinson '20, E. C. Jewett '22, D. B. Kimball '20, H. C. Kittredge, Jr., '39, H. D. Klitgord '40, A. S. Knight, Jr., '42, N. T. Kridel '40, D. J. Kridel '40, E. P. Kron '34, Andrew Langdon '22, H. H. Landgon '33, H. H. Leary '23, Gordon Levinson '32, L. T. Littlefield '27, E. M. Low '29, D. B. Lull '45, F. W. Paul '35, R. W. Peters '30, E. E. Richardson '19, J. A. Rodgers '35, Hrand Saxenian '45, H. H. Scott '43, J. V. Sharp '36, Peter Sluis, Jr., '45, W. H. Strain '31, G. R. Thompson '34, L. C. Twichell '24, W. H. Vogt, Jr., '19, D. B. Webster '16, V. E. Whitman '22, R. M. Wilson '30.

Present on both April 12 and March 6 were these men: A. K. Ackoff '39, H. E. Akerly '10, C. H. Alexander '39, Sydney Alling '11, J. F. Ancona '03, J. C. Artz, Jr., '40, D. L. Babcock '33, R. W. Baschnagel '32, Harold Bishko '25, C. G. Boland, '3d, '45, W. L. Brice '44, Geoffrey Broughton '36, J. S. Bruce '39, K. B. Castle '24, H. E. Clements '32, R. S. Cook '21, C. K. Crofton '22, H. E. Essley '36 and guest, C. W. Jacob '36, F. J. Kolb, Jr., '38, R. H. Lambert '24, G. T. Lane '13, C. F. Payne '33, Hugh Shirey '22, Gregory Smith '30, H. L. Smith, Jr., '39, R. E. Smith '33, C. J. Staud '24, Douglas Stewart '33, H. O. Stewart '09 and son, R. G. Talpey '41, F. C. Taylor '11, F. B. Thorne '27, F. P. Thornton, Jr., '36, P. B. Wesson '98, C. F. Wray '95, C. L. A. Wynd '27. — **FREDERICK J. KOLB, JR.**, '38, *Secretary*, Building 14, Kodak Park, Rochester 4, N. Y.

Technology Club of the Connecticut Valley

The executive committee of the Club met at the home of Theodore Lange '01 and decided that the next meeting would be at Tinti's in North Agawam on June 19, when a slate of officers will be submitted for election to replace the officers who have served for the past two years during the period of the emergency. It was also voted at the executive committee meeting to change the name of the Club to M.I.T. Club of the Connecticut Valley. Action upon this recommendation will be taken at the June 19th meeting. A program of motion pictures is planned for that night. — **MINOT R. EDWARDS '22**, *Acting Secretary*, Holyoke Heater Corporation, 54 Waltham Avenue, Springfield 9, Mass.

Washington Society of the M.I.T.

Ladies' Night was held in colorful floral and musical surroundings at the Hotel 2400 on May 1. Charley Maskell '30 was chairman of the occasion and put on a good party. As we entered the rooms, we found a gay accordionist tuning away among soft lights and clinking glasses. After dinner she presented two very fine solos. We like music at our get-togethers and will miss Joe Gaffney '28, who has returned to Chicago now that the war is over and he is a civilian again. How we'll have to dig to find a fellow to fill his seat at the piano!

After dinner and before getting down to the meat of the evening, we watched a magician produce silk scarves and kittens from nowhere. More important, though, was what Bill MacMahon '22 produced — an invitation from Allen B. McDaniel '01 of Waterford, Va., to the Society to hold the annual picnic at his estate in the country. This will be our first picnic there since the war began. We have accepted.

Elmer Kayser, dean of George Washington University, the speaker, presented an address on world events. He sounded a realistic keynote in mentioning the V-E Day camaraderie between the great military powers, now lost — "The masquerade is over, and so is love." America must deal with present and future situations, forgetting the past except as it teaches lessons. According to Dean Kayser, we must not deal with China on a missionary barrel basis any longer but must meet her on her own terms, man to man. As for Britain, we were told, we find a lesser power than before the war, but only because her dominions are greater. The sea power of Britain is great, but only when back of it is a corresponding merchant marine, and back of that a forward-looking technology, and back of that the instrumentalities necessary to co-ordinate and focus the combination of all components. Only then is there power. The Dean remarked, "America's outpost of defense is still the island of Britain."

Our State Department's toughening attitude toward Russia was applauded by the speaker. In this connection he referred to our own Army as an army that may be large enough for occupation but not large enough for negotiation. Quoted Dean Kayser, "We have a rendezvous with Destiny, and we have arrived at it before we are ready for it." The only way to prepare

ourselves is to develop a large view of world affairs in the communities where we live in order to make democracy's policy an intelligent one. America, as a people, must learn discipline.

Present were the following Technology men, many with guests: 1890: J. G. Crane; 1893: P. H. Thomas; 1896: H. G. Hamlet; 1897: P. L. Dougherty; 1902: H. M. Chapman; 1904: G. N. Wheat, F. W. Milliken; 1905: E. F. Kriegsmann, O. C. Merrill; 1907: E. W. James; 1909: B. A. Robinson; 1915: A. D. Beidelman; 1916: W. E. Wentworth, F. P. Upton; 1917: W. C. Mehaffey; 1922: L. W. Conant, H. H. Fisk, W. K. MacMahon, R. K. Thulman; 1924: W. V. Cash, G. E. Lamb, R. P. Schreiber; 1925: Ralph Ilsley; 1926: M. O. Soroka; 1927: E. G. Cowen; 1928: A. E. Beitzell, G. D. Mock; 1929: J. A. Plugge, N. P. Stathis; 1930: A. F. Bird, O. G. Green, C. W. Maskell; 1932: G. A. Lowery, F. M. Moss; 1933: M. E. Gardner; 1941: Franklin Hawkins; 1943: W. J. Cochran. — FRANK W. MILLIKEN '04, *Secretary*, 613 Greenwich Street, Falls Church, Va. ALBERT F. BIRD '30, *Review Secretary*, 5070 Temple Hills Road, Southeast, Washington 20, D. C.

CLASS NOTES

1886

The Secretary is indebted to Chester L. Dawes '09 for the ensuing account of the dinner given to Harry E. Clifford, Professor Emeritus, Harvard University, on the occasion of his 80th birthday. (See also the 1909 notes.) May the coming years bring to our illustrious classmate such comfort as only a well-earned success can bring, is the wish of his classmates.

Easter Sunday, April 21, was the 80th birthday of Harry E. Clifford, VI, who for so many years acted as head of the Electrical Engineering Department at Technology. The occasion did not pass unnoticed by his many friends and former students, and as evidence of the high affection in which he is held by them, more than 70 remembrances, such as flowers, letters, and other congratulatory messages, were received from over wide parts of the country. A large number of the letters from former students reminisced over early experiences at the Institute and recalled the inspiration they had derived from Harry's teaching and the effects it has had on their success in life. On Monday evening, April 29, Harry was the guest of a group of intimate friends and former students at a dinner held at the Harvard Club of Boston. During the evening, a number of the letters he had received were read, and several of those present told of their personal associations with Harry and how much they had benefited from them. Among those present were E. L. Chaffee '07, C. L. Dawes '09, C. S. Ell '11, G. M. Fair '16, Albert Haertlein '18, R. R. Lawrence '95, E. L. Moreland '07, D. P. Robinson, Sr., '92, D. P. Robinson, Jr.; Reinhold Rudenberg, C. H. Berry, L. J. Johnson, R. T. Gibbs, and H. M. Turner, of the Harvard Engineering School faculty; and William C. White, dean, and R. G. Porter, professor of electrical engineering, of Northeastern University.

Harry will always be remembered as one of the most clear-cut and inspiring lecturers

that the Institute has had, and through his keen analytical ability and wide knowledge he was able to make many important contributions to the development of electrical engineering. Also, probably no one person has had as great an influence in raising the standard of electrical-engineering education to its present level as Harry Clifford. It will be recalled that in the early Nineties electrical as well as other engineering subjects were taught with a leaning well toward the "practical" side. For electrical engineering he changed all this by introducing into classroom and laboratory work rigorous mathematical and physical analyses of electrical engineering phenomena. Not only did his methods develop rapidly at the Institute but, through his former students and his close associations with educators, they became wide-spread among the leading engineering schools of the country and are the accepted standards of today. Among his other contributions to engineering education is his work as consulting editor of the "Electrical Engineering Texts," a series of technical books covering the field of electrical engineering and published by the McGraw-Hill Book Company. No one series of books under a single editor or publisher has had as authors so many leading authorities in their respective fields, has had such wide circulation, and exerted so wide an influence on the teaching of electrical engineering as has this one.

Those who have seen Harry recently have noted how lightly time has dealt with him, and he himself remarked that his only regret was that he could not have another 80th birthday — he enjoyed them so much. — ARTHUR G. ROBBINS, *Secretary*, 12 Grove Street, Winchester, Mass.

School of Mechanic Arts

Our last article of news was published in The Review for May, 1942. Since then our Secretary has compiled and edited our class history, which was published by the Class as of April 15, 1944. Each living classmate and the next-of-kin of classmates who have passed on have received a copy. President Compton was presented with an engrossed copy, and copies were presented to the Alumni Association in which we enjoy membership, to the Institute's Committee on Historical Collections, and to its Library. In addition, the policy of honoring each classmate through the presentation of an engrossed copy to the historical society or public library of his "home town" has been followed; engrossed copies have been presented to historical societies of states where our classmates were natives or resident, and to colleges and institutes in which our classmates studied or taught and to the libraries of companies with which our classmates have been connected.

On May 15 of this year we celebrated our 60th reunion at the Parker House in Boston, with an attendance of 21 persons, which we believe is an unusually good record for a class 60 years out of Technology. A reception was held from 12:00 noon to one o'clock, when dinner was served, after which a class social was held until four o'clock during which class reports were presented, followed by anecdotes, singing, reminiscences, and a general good time. Classmates present were Henry P. Benson, President and Treasurer, Charles H. Her-

rick, Secretary, Charles E. Holmes, John W. Killinger, Howard G. Noble, William C. Smith, and Fred A. Whitney. Two classmates attended from long distances, Killinger from California and Smith from Maine. Several classmates no longer with us, were remembered by the attendance of relatives. Edward G. Osgood, our first President, was represented by his wife, Mrs. Florence F. Osgood, who came from New York, and his son Edward F. Osgood, who, with his wife, Muriel A. Osgood, came from Vermont. William F. Dawson, our second Treasurer, was represented by his wife, Mrs. Julia E. Dawson, his son, Charles W. Dawson, and his daughter, Mrs. Frances Dawson White. Robert S. Ormsby, formerly of Epping, N.H., was represented by two of his daughters, Mrs. Jeanette Ormsby Sleeper and Mrs. Eleanor Ormsby Page, the latter coming from New Hampshire. Reynold H. Sutherland, our first Treasurer, was represented by his son, Kenneth R. Sutherland '22, mechanical engineer. We were also favored by the attendance of Mrs. Rebecca A. Benson, wife of our President, of Mrs. Harriet M. Noble, wife of classmate Howard G. Noble, with their daughters, Mrs. Geneva Noble Eastman and Mrs. Theodora Noble Harding, and Mrs. Frances M. Whitney, wife of classmate Fred A. Whitney. Our remaining classmates, Benjamin M. Howe, Richard A. Leigh, Herbert L. B. Lawton, James G. Langdon, Fred M. McGraw, and Ambrose Walker, were absent on account of long distance travel, home duties, and illness.

Three classmates, Frank E. Beular, Frederick W. Tyler, and William L. Wall may be living; at least, although we have full data about them for publication as addenda to our class history, we have not as yet been able to obtain certified death records. We hope we may yet be able to get in touch with them and are making every possible effort to do so. Our Class numbered 47 members on enrollment.

We are saddened by the necessity of recording the following necrology: on April 26, 1945, Frank Stedman Wilson, classmate, his next-of-kin being a cousin, Chester A. Wilson, 53 Chestnut Hill Avenue, Brighton 35, Mass.; on May 24, 1945, June Gordon Howe, wife of Benjamin M. Howe, classmate, 1026 San Rafael Avenue, Glendale 2, Calif.; on June 15, 1945, Grace Clark Howland, daughter of classmate Otis R. Clark and wife of Willis Howland, 2 Common Street, Wakefield, Mass.; on March 19, 1946, Gertrude Hall Herrick, wife of classmate Charles Hubbard Herrick, 371 Columbus Avenue, Suite 5, Boston 16, Mass. — CHARLES H. HERRICK, *Secretary*, Suite 5, 371 Columbus Avenue, Boston 16, Mass.

1888

The Assistant Secretary reports as follows: "As to my trip to Florida, where I sojourned for several weeks this winter, the most exciting things were those that did not quite happen. On the long drive of 150 miles across country between the East Coast — where we went first — and the West Coast (Sarasota), there was only one real town, Okeechobee, about halfway across. If our tire had given out on the long road, we should have been in a pickle. But it waited and blew just as we arrived at Okeechobee and were looking for a place

to lunch. Consequently, repairs were made while we were eating, and not even a minute's time was lost. I advise everyone crossing Florida to arrange for any breakdown to occur at Okeechobee. Two other tire troubles we had, due to poor new inner tubes. One occurred while at a gas and repair station in Pompano, Fla., where we spent several weeks, and the other near Lynchburg, Va. In the latter case, a taxi came along just as we stopped and took us two miles to the nearest village, where no repair truck was available, but where we persuaded a truck driver in a beer saloon to go and help us out — and yet we are again discussing prohibition!

"On a trip like this it is always a question whether one should engage overnight stopping places in advance, necessitating a definite length of drive each day, or trust to good fortune and ingenuity to find a place each night in the always crowded town. We chose the latter. We were almost, but not quite, stranded in Jacksonville. We telephoned from Stark, Fla., 50 miles away. Nothing anywhere in Jacksonville. So we found a place in Stark. The next night, stopping at Walterboro, we found a man who had missed his advance reservation at Jacksonville because he arrived at 7:15 P.M. and had had to drive 75 miles from there to Brunswick, Ga., to find a place to lay his head. Comparing, as we did, the East and West Coasts, we decided that the East Coast has the advantage of a beach at your door, while on the West Coast at most places there is a drive of several miles for your bath. But on the whole we liked beautiful Sarasota and its delightful Mira Mar Hotel best of all."

Word has just been received from Chicago that Fred Nichols' wife passed away on April 11. On October 7 she fell and broke her left hip. After many weeks in a hospital she underwent an operation, to no avail. Fred is now living at 420 Wisconsin Avenue, Oak Park, Ill.

The Railway Age of April 20 has an illustration of the memorial plaque dedicated to the memory of William G. Besler, former President and board chairman of the Central Railroad of New Jersey, which was unveiled at ceremonies held on March 30 at the Jersey City terminal. Emblazoned on the plaque are a silhouette in bas-relief of Mr. Besler, the dates of his birth and death, and the following: "Erected by the employees as a tribute of affection and esteem and in testimony of their continued fidelity to the interests he faithfully served." The Secretary hopes to see this plaque on his way back to Princeton, about October 1, although it is a little off his direct route.

The 58th class dinner was sponsored by our genial Assistant Secretary, following the example of Ned Webster, Ivar Sjöström, and Fred Ellis. John Runkle has offered to be sponsor in 1947. Those present at the Engineers Club in Boston on May 11 were as follows: Bates, Cavanagh, Collins, Conner, Ellis, Faunce, Hamblert, Linzee, Runkle, Sjöström, Sweetland, and Thompson. The Secretaries read letters of regret from the following: Eastman, Robert Smith, Reynolds, Bird, Atkinson, Cheney, Merrell, Marion Talbot, Safford, Silsbee, Pool, and Daniell.

Eugene S. Daniell writes: "I am more than sorry not to be with you at dinner on

May 11, but we do not leave Florida until May 12. I am still in good health, however, for my years (83) and can look forward to another year. Perhaps the following quotation from Robert Herrick would be appropos: 'Eaten I have and tho' I had good cheere/I did not sup because no friends were there/Where mirth and friends are absent when we dine or sup/There wants the incense and the wine.' Good liquor, said to be the milk of old age, is hard to come at these days — along this line I am enclosing an apostrophe to good whisky which came to me from my father many years ago. Should it appeal to you, read it to the 'boys' and at your leisure return it to me at Franklin." — **BERTRAND R. T. COLLINS, Secretary, Chebeague Island, Maine. SANFORD E. THOMPSON, Assistant Secretary, The Thompson and Lichtner Company, Inc., Park Square Building, Boston 15, Mass.**

1890

Rev. Willard Holt Roots, who was graduated in Course IX, died on March 31 in Mansfield, Mass., where he had continued to live after retiring in 1935. From 1890 to 1896 he taught in Portland, Ore., worked on a dam in Washington and in Tennessee and Arkansas. After this he attended the Episcopal Theological School in Cambridge, from which he was graduated in 1898. Then followed 17 years of strenuous ministry as a circuit rider in the rough, sparsely settled Northwest, where he rode 10,000 miles on horseback to preach and advise miners, farmers, cattle men and lumbermen. His territory covered northern Washington and Idaho, and he spoke of these as "some of the richest years" of his life. George Gilmore had in our '90 files an address Roots delivered in Spokane which shows the thorough, broad understanding of the problems and possibilities of the Church in these fields. From the Northwest he came to Worcester, Mass., and in 1917 to Mansfield. Of his work there the *Mansfield News* says: "In the 17 years that Mr. Roots served St. John's Church here the parish grew in substantial numbers, and before his retirement on August 31, 1935 he had been the guiding spirit in the construction of a parish house attached to the edifice where the church's allied organizations carried on their activities. Devoted as he was to his own parish and the church of his birth, Mr. Roots was beloved throughout the community, and the full extent of his charities probably will never be known." He was deeply interested in Boy Scout work and gave active personal support in serving for several years on the district committee. In 1908 he married Katherine Philp of Pullman, Wash., who survives him, as do also a daughter, who has been dean of girls in Washington State School for the Blind, and a son.

William H. Fenn, Jr., died on April 14 at Wilmington, Del., where he had lived for more than 40 years. Before coming to Technology, where he was graduated in Course I, he had spent one year at the University of New York. According to the *Wilmington, Del., News*, "He was associated with engineering concerns in Newark, N.J., and Middletown, Conn., before coming to Wilmington as President of the Manufacturers' Contracting Company in 1903. They built parts of the Du Pont

Building which included the Hotel Du Pont, the Wilmington Country Club, and other buildings. During World War I he organized the Artillery Fuse Company in Wilmington which manufactured time fuses for the Allies. He retired about fifteen years ago. He is survived by his wife, a son William H. Fenn III, and a daughter Mrs. John Brill of Wilmington."

It is good news to hear that work necessarily interrupted during the war has been resumed and is progressing well at the California Institute of Technology, on the final figuring of the great mirror for the 200-inch telescope to be mounted at the new observatory on Mount Palomar in southern California. This telescope was conceived by our George Ellery Hale and financed by the Rockefeller General Education Board, which regarded Hale's judgment of the possibilities of such an instrument sufficient to warrant an investment of six million dollars. It is sad that Hale could not have lived to see this great project which he initiated brought to completion. He was a great telescope builder, being responsible for the 40-inch Yerkes refractor, the 100-inch Hooker reflector, each the largest instrument of its kind in the world, and the unique tower telescopes on Mount Wilson, designed especially for solar work. It is the expressed wish of many that, when the 200-inch is dedicated, it may be known as the "Hale Telescope," a fitting tribute and memorial to one of America's greatest astronomers.

It is a pleasure to report that for the Alumni Fund of the past year, 1890 considerably exceeded its quota, both as to the number of contributors and the amount contributed. — **GEORGE A. PACKARD, Secretary, 50 Congress Street, Boston 9, Mass. HARRY M. GOODWIN, Assistant Secretary, Room 3-233, M.I.T., Cambridge 39, Mass.**

1892

Notice has just been received of the death of Josiah C. Norcross on May 27 in his 76th year, after an illness of approximately eight weeks. Norcross was a graduate of Phillips Exeter Academy and entered the Institute from Lowell, Mass., with our Class. He chose the Course in Electrical Engineering, which had been established a few years previously in 1882. After finishing his course at the Institute, he entered the employ of the General Electric Company and for a time was engaged in supervising the construction of power plants in the South. On May 12, 1909, he began work for the Edison Electric Illuminating Company of Boston, now the Boston Edison Company, as assistant superintendent of installations. He continued in this position in charge of electric meters and service installations, testing and research for more than 31 years, until his retirement on July 1, 1940. Norcross attended a number of our class reunions, the last one being the 50th in 1942. He was a member of the New Hampshire chapter of the Society of the Cincinnati, a former member of the Engineers Club of Boston, and a member of Christ Church, Cambridge. He was married in 1905 to Louisa Jane Bellows, who survives him, living at the family residence, 35 Bowdoin Street, Cambridge, Mass. Also surviving him are a daughter, Mrs. Thomas M. Chadwick, Newburgh, N.Y.; a son, Dr. Nathan

Crosby Norcross, Oakland, Calif.; a sister, Mrs. Edward N. Burke, Little Boar's Head, N.H., and a brother, Nicholas G. Norcross, Lowell, Mass. — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

1894

Charles Abbot has not ceased his scientific activity since his retirement as secretary of the Smithsonian Institution in Washington. Two brief papers have recently been received from him, bearing his present title as research associate. One of these deals with energy spectra of stars and describes the infinitely delicate research by which he has been able to make his determinations. The other paper presents new evidence on Abbot's method of long-range weather prediction, or forecasting, by a systematic statistical study of what he calls "preferred" dates for precipitation. He gives a table of preferred dates for each of the months of the current year. Both papers are somewhat too technical for your Secretary to review in words of one syllable.

Frank S. Howland, who has for many years been one of the substantial citizens of Athens, N.Y., has recently reported a change of address to 164 Somerville Street, Ahmtsic, Montreal 12, Canada, care of Mr. Elliot. Frank did not state whether the change is temporary or permanent. We hope to hear from him soon on this point.

Two deaths have been reported to the Secretary since his last communication of class news. William E. Parnall, who was for two or more years a special student in Electrical Engineering, died on January 12. Ever since leaving the Institute, he has resided on the Pacific Coast, part of the time in Los Angeles, but recently in San Francisco, where he lived at 15 Hazelwood Avenue. He is survived by his wife, who kindly reported the fact of his demise; but no other details are at present available.

Fred L. Stearns died in Framingham on March 21. For several years he had lived at the home of his brother, Otis T. Stearns, 19 Arthur Street. Stearns was born in Hopkinton, Mass., on August 3, 1866, the son of Gilbert A. and Lucinda (Grandy) Stearns. A few years older than most of his classmates, he entered Technology in the fall of 1890 and pursued the course in Civil Engineering but did not stay to receive a degree. Much of his professional life was spent in New York, for many years with the department of street cleaning and later in work on the extension of the water supply of New York City, from the inception of the new plans for extension through the whole period of its development and construction and subsequent control. During this period he lived at Scarsdale and at Kensico, N.Y. He had been married, but his wife, and also two sons, had predeceased him. After his retirement for age he had made his home in Framingham. He was buried in the family lot at Kensico, where the other members of his family were interred. Stearns was a man of fine character and friendly personality. His old associates in Civil Engineering will remember him with deep regard and respect. He was a member of Grace Congregational Church, Framingham, and of the American Society of Civil Engineers. — SAMUEL C. PRESCOTT, *Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

1895

Those who were fortunate enough to attend the 50th reunion last June will remember how Ed Barry came from California to see his classmates. This association is the last he will hold with the Class, as he passed away on May 6 at the home of his daughter, Mrs. B. E. Monroe, 3108 Gibbons Drive, Alameda, Calif. After leaving Technology he went with the Bureau of Construction and Repairs of the United States Navy and was stationed at the Cramps' Shipyard, Philadelphia, until 1898. After deciding "there were too many rear admirals ahead" of him, he was associated with William Cramp and Sons until 1901, then going to the New York Shipbuilding Company in Camden, N.J. While in these positions, he assisted in the construction of the battleships *Indiana*, *Massachusetts*, *Iowa*, and *Maine*, the Russian battleship *Retzvizan* and cruiser *Variag*, and several United States cruisers and large merchant ships. In 1903, he began work with the Illinois Steel Company, Chicago, in their cement department, which later developed into the Universal Portland Cement Company, a subsidiary of the United States Steel Corporation. He was superintendent at Chicago from 1905 to 1907, when he was sent to Pittsburgh to build a new cement mill. In 1930, he was appointed assistant operating manager in Chicago, and later became manager of industrial relations in New York, from which position he retired in 1943. His son, C. Humphrey Barry of White Plains, N.Y., succeeded his father as manager of industrial relations. After retirement he made his home with his married daughter, Mrs. B. E. Monroe, who survives him, as does a son residing in White Plains, N.Y. Barry was a Delta Kappa Epsilon at Technology and a former member of the Engineers Club of Chicago and the University Club of Pittsburgh. Barry is the last one of the three 1895 men in the Course in Naval Architecture to pass on.

We learn by a clipping from the Boston Sunday *Herald* of May 19 that Madison M. Cannon died on May 18 at his home, 33 Hancock Street, Auburndale, Mass. He was chief construction engineer on the Arlington Memorial Bridge in Washington. As a civil engineer, he was associated with B. Perini and Sons, Inc., for many years and was engineer on the Ware waterworks dam. He was a member of the American Society of Civil Engineers. His wife, a daughter, Mrs. William Flye, and two sons survive him.

Frank Curtiss Schmitz, born in October, 1870, died on March 28 at Muncy, Pa. Frank was born in Clinton, Iowa, where he attended high school, receiving his degree from Technology with our Class. His passing was due to a serious heart ailment, apparently superinduced by overstrain in his construction work. He first entered the engineering field as construction engineer with the Pennsylvania Railroad. Later he became manager of the Columbia Concrete Company. He was secretary of the Mahogany Association, he designed and built several fireproofing plants; and his last engineering connection was as field engineer for the Bayonne Associates, while building the United States Naval Dry Docks. This last work was apparently

too strenuous for his years and left him with a weak heart, which was finally his undoing. He leaves Mrs. Schmitz and his daughter, Mrs. Dorothy Vogel of Decatur, Ga. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

1896

At the time these notes are being written, two weeks ahead of our reunion, it looks as if the attendance in Osterville would be somewhere around 60, including some wives, and the class contributions to the Alumni Fund have already reached the surprising total of over \$9,000, or nearly six times our quota. Some fellows are very sad over complications and other engagements which will keep them away from the reunion, especially Charlie Hyde, Lou Morse, Marsh Leighton, Lythgoe, and McAlpine. The last named has a conference in Atlanta that week. Sjöström has undergone an operation, but is convalescent, and plans to attend the events of Alumni Day at M.I.T. on June 8. Full account of the doings will appear in the November issue of *The Review*.

This is also the week when Damon and Rockwell are on their spring fishing trip to Moosehead Lake in Maine. Report of results will be forthcoming in due course.

Elmer Robinson is back in Reading, Mass., at 43 Prospect Street, after all his special work in Portland, Maine, during the war. Lythgoe retired on May 31 after long years of service in charge of the food and drug division of the Massachusetts department of public health. Fuller arrived back in Brockton from Florida about the first of May by automobile and reported that he had had two days of rain so heavy that he had been forced to stop several times. It was an event, because in Florida he had not seen any rain since November, except for a few showers. Mark Allen has been trying to build a new laboratory, but with the steel shortage and strikes it has been a heartbreak. Belated information from Helen Chamberlain Dodd reveals that she was another classmate who wintered in Florida and is now back home in Newbury, Vt. Charlie Hapgood has retired from his old job with the New England Rendering Company and is now at 1070 Beacon Street in Brookline.

Herb Newell feels that it is too long a trip from Portland, Ore., to Cape Cod for him to undertake to attend the reunion. His health, however, remains good and he does certainly get around in the West, according to his record of having driven one car nearly seven years and covered 44,400 miles. He still finds that he can change tires without difficulty, especially with the aid of a hydraulic jack, which functions so splendidly that he does not get his clothes soiled in the least. His son is still with the Army in Italy, where the boy now finds his situation in the southern part to be more pleasant country than in the north where he formerly was located. In passing through Rome the boy talked to his father by telephone, and the service from Portland to Rome was good, and that from Rome to Portland was fair. The boy hopes to be back in the United States in July, after having been in the Army more than three and one-half years, and then get his discharge and resume his profession of practicing law.

Among the brightest spots of enjoyment in the life of the Secretary are those times when a periodical letter arrives from Con Young. These are always chuck-full of news and Con's characteristic gossip. It does not seem fair for the Secretary to keep all this enjoyment to himself; hence he is giving classmates the opportunity to enjoy Con's latest contribution, which arrived from Dunedin, Fla.: "When we left the Cape on October 13, we were both in a state of semiexhaustion. I had been toting around a dozen or more gallons of water about a hundred yards, in a wheelbarrow, from a neighbor's shallow well yard pump every day, from October, 1944, until two weeks before our departure last October. I had been going to our plumber about once a month from February to October, with tears in my eyes, which he could not see, but his wife did. I had my cellar hand pump and three five-foot lengths of pipe, but he had a weak heart and could not lift those heavy weight drivers. Along in September two returning veterans joined his staff. He arrived with them the first week in October, and in a few hours nice fresh water, without the taste of salt, came forth from a 13-foot depth. The plumber said his wife had threatened to divorce him if he didn't go pronto and get that yard well going for Mr. Young.

"I had been trying for months to get a good painter to put the outside trim in good shape for the winter, without success. One of the younger fellows, who was driving trucks for a building supply outfit, squeezed in two part-day periods to do the gutters and ridge boards. During the second one, in late summer, he slipped twice — first, on the garage roof, and then on the high house roof. The first time, the white paint on the green-stained roof shingles cleaned up fairly well. The second slip was much worse. But I was thankful that only the roof and some cedar trees were scarred, and he was saved from injury. He had jacked me up to regular painter rate. It took more time to clean up than it did to paint. Well, I paid for all the time, and when I said, 'Frank, how much are you going to charge me for the half gallon of paint you spilled?' he looked bewildered and said, 'Huh.' Then in mid-September one of my old timers was released from ship work. He got busy, and in spite of bad weather he undercoated and finish-coated the entire outside trim just a few days before we left, with several days out because of rain and dew.

"Well, the car had been confined to one or two calls a week for a cleaning lady, including her return trip, one marketing trip a week to Hyannis and one four-mile trip each week for chicken and eggs. Altogether these three trips just about used our gas allotment. So, for 16 months the old girl wasn't much interested in rolling more than regulation speeds. That, following a previous garage confinement of eight months, in the vigorous climate of Ridgefield, Conn., stored up considerable energy. Somewhere in Connecticut we were held to 25 miles an hour for over a half mile. The lead car, of three, must have been intensely interested in counting the leaves on the trees. He made no effort to accelerate, for at least a half mile after we left the village. We were then in the lowland and approaching a long moderate hill. There were no

cars approaching and a long dotted line up the hill more than a half mile in length. Miss Olds swerved left for the pass and made it very neatly before reaching the no-pass, full white line. Approaching cars were the means of dissuading any more following cars from overtaking the private funeral procession and passing it. We had rolled along unconcernedly and comfortably for about a mile when a liveried gentleman with a two-gallon, cowboy hat thumbed me to the right of the road. He very thoughtfully parked to the rear about 50 feet. I walked back to his car, and he wanted to know where I was going. I truthfully told him that my wife was nervously ill and that I had been advised by our Cape Cod doctor to get her to our doctor in Bridgeport, Conn., and to the hospital for a heart and blood condition check. By that time my hands were trying to beat time to a rapidly accelerating heart palpitation. He seemed to observe that and then said, 'It would seem that you should go there, too.' I told him I was planning just that and an electrocardiogram examination. Up to this time the conversation was unheated and gentle. Then he asked for my driver's license and registration. I had them 1943-1945 inclusive. There were no marks on any of them. 'A very good record,' said he. 'But your '45 license expires October first.' He was of a mind to hold us there until I could get a renewal, until I told him that might possibly engender a complication of my wife's health seriously. 'Well,' said he, 'will you promise me to remain in Bridgeport until you receive your new driver's license?' 'Most heartily,' said I. So with a polite 'You are a real highway gentleman' and a wave from him to proceed, we began to roll, but Miss Olds was quite satisfied to keep well within the 45-mile-per-hour limit.

"So two thankful old folks, or should I say one old man and his wife, were very happy to spend the late afternoon with relatives in New Haven, and to reach the home of a niece, an eminent lady M.D. In this state they issue drivers' licenses through the office of the probate judge as of October 15, and registration certificates for January first tags through December. My memory secretary had just overlooked the date. The following morning a letter was dispatched, air mail, to the judge, whom I knew personally. We had arrived there Saturday evening, and when no reply came by the following Wednesday evening, Connie was worried. The penalty down there is an eye examination conducted by one of the young highway cops in the judge's chambers. It makes no difference if one can tell a type of car approaching a half mile or a mile distant. That does not qualify. One must read the lowest line of fine print on a lettered cardboard, poorly lighted, and at a distance of 18 feet. I have had trouble with my left eye for these past 32 years. A speck of dirt caused an ulcer in the right pupil in 1913, just before I transferred from New York to Pittsburgh. It left the eye almost totally blind for two years. Dark glasses and a black felt patch on the bad eye and primarily a good doctor brought the sight back, but with an exaggerated astigmatism and a slightly under normal vision. Then we had a visiting date with Mrs. Edison from October 19 to 23. Then, when the card did not arrive

Friday, I was getting pretty nervous. But a telephone call from Mrs. Edison's secretary about noon informed us that members of the family had planned a week end, and asked that we arrange a postponement until the following Tuesday. As we were packing that morning to proceed, license or no license, a letter to the doctor niece from a new judge arrived, with the license enclosed, and a request to forward it to me to Mrs. Edison's home in Lewellyn Park, West Orange, with his apology. The judge I knew had been out, and my letter had gone to his residence. Well, that was one great relief, and with regained strength and courage we began our southward journey. We had two interesting and happy days with Mrs. Edison and then rolled on to the little village of St. Davids, just on the edge of Wayne, Pa. When we arrived at Doylestown, Pa., we had plenty of time, so parked at the ancient Fountain Inn for lunch. We had spent the night there a number of years ago. Memories of that very good Pennsylvania Dutch cooking brought hopes of a good steak and fried potatoes, but we got fried liver for me and hamburger for Abby. Both were smothered in onions, and Abby slipped hers over on my plate. There was also richly creamed cold slaw and plenty of good coffee. We had been on a canned meat diet so long that anything seemed a treat. A slow run, in a drizzling rain got us to St. Davids at about three. Our hostess and son, recently returned from service in Italy, were there to give us a warm greeting. In the evening we sat down to a big sirloin steak and the usual surroundings; for dessert a very generous helping of ice cream bathed in hot chocolate caramel dressing. I forgot the capacity of my food basket and went all out for the entire course. It was an effort. But when our hostess said, 'Oh! dear Con, why did you eat so heartily at that old Inn? You knew I would be making a special effort for you and Abby,' I loosened the belt and pitched in. The short night was a hectic one, and most of my time was spent in the bathroom. However, I was able to drive the car, and a short run brought us to the home of Lou and Blanche Morse. Lou was walking up the street just as we got parked at their curb.

"Well, Lou looked a bit older and a bit grayer. He was soon to celebrate formally his 30th reunion of service. He had a fine picture of himself and the older associates with whom he had worked for so many years. We had shared so many pleasant hours with them and all of the children during the teen age period and following into their married years, at their home and elsewhere, that it took several hours of the afternoon and the evening to catch up. We had not visited them for a number of years. Again my tummy warned against heavy food, and Blanche was disappointed in not being able to spread all the good things she knows so well how to prepare. But that loss in time for food consumption was well filled with our conversations about the past, present, and future. We left an urgent appeal for them to come to 'Pine Shadows' on the Cape for the reunion next June.

"We got away soon after breakfast the following morning and rolled into our old neighborhood in Chevy Chase, Md., about two o'clock that afternoon. An hour later I began to fold up with a bad pain in the

abdominal region. We were at Marcellus and Harriet Sheild's. Their home was just to the rear of our 1917-1918 home in Chevy Chase. Mar had been secretary of the Appropriations Committee of the House of Congress for 37 years. We were very congenial friends then, and since. The pains increased rapidly, so Harriet took me to her doctor at once. He gave me a general once-over and prescription, and said back to the house and bed at once. I was three days in bed. The doctor came two afternoons. I was up but pretty weak the fourth day, rested the fifth, went up to the Chevy Chase Club the fifth but did not meet any of my old golf buddies. I still carry an 'absent' membership. I didn't have strength to try the putting green. However, I felt strong enough to do an errand at my bank and the old drugstore the next day. So the following day we got on our way. The old strength returned gradually during the four days of driving to reach this place. While here, we took time out to look at this house and get a four-hour option on it. It was fortunate we did.

"Old friends whom we knew well in Fort Myers had moved to St. Petersburg about 10 years ago. Roy got the south Pinellas agency for the Sinclair Company, and he now has control and ownership of 20-odd stations. They have a large and beautiful home out on Shore Drive near the water and Snell Island. They and the Clarys had been looking around for us but were unable to get the type of house or location we wanted. So we cinched this place. It was fortunate that we did. Rentals out from under ceiling prices had been jacked up from 50 to 100 per cent. Even a year ago Joe Clary paid a goodly advance on the pre-war price of his place. They are about a mile from the Bishops', where we were house guests for 10 days. A flyer lieutenant, wife, and little boy were in here until November 15, and we could not get into this house until the 16th. We are in a two-lot location at the rear of a lot to the west that borders on Edgewater Road to the direct west. There is a narrow strip of land between this road and the Gulf. Both lots directly west of us are vacant, so we have beautiful views of sky, water and clouds from the triple windows on the west side of the house. It is about 300 feet north from the rear of our lot to the dividing line between Dunedin and Clearwater. Jefferson Memorial Highway, or Route 19, follows Harrison Avenue out of Clearwater, north, and Edgewater Road in Dunedin. This house faces north, and to the west there is a four-run of citrus fruit trees about 300 yards long running west from the west boundary line of this lot, about 40 feet west of the house. On the east side of the house are two bedrooms with double closets between the two rooms. The bathroom adjoins part of the west wall of my room in the southwest corner. A wide T-shaped hall leads to the bathroom, this room, the northwest bedroom, and a goodly-sized closet under the stairway to the two rooms and bath above. In the wide part of the hall opposite the closet is a fuel-oil heater that has a flue connection outlet with a tile flue chimney. As far as I can figure, about 30 per cent of the heat radiating from the internal flue pot, or fire chamber, gets to the hall and the rest up the chimney. I

think Joe Harrington would be some boy scout if he would show these dummies down here just how to distribute heat from a portable heater based on the floor level. We find the cold days and nights here to be in a ratio of about five to one as compared to Fort Myers, but the heat of the sun through eight hours of the day, with no sleet or snow, makes for a more bracing atmosphere here than a hundred or more miles south. I doubt if we will get much warm bathing here before the middle of next month. There are no regular beaches this far north. Clearwater Beach, about four miles from us, is the best, so we are told. Our kitchen is about 9 by 10 feet, and between the bathroom and dining room to the west. Abby's joy is the all-electric. So Connie may now be in for scrapping the big coal-gas combination range and boiler for a new General Electric electric de luxe range and hot-water heater, cabinet style. Now if you can stack us up against one of your friendly buddies in G.E. who could push us in on the June rush, it would go fine with Abby. Of course I know Gerard. He has always given me a warm greeting, and once a hug, at the reunions, in the earlier days at New York, and later at Cambridge, but now he has too many more important matters to be concerned with. Then, if our plumber should be as busy as last year, I might have to invite a husky friend to come and visit and enjoy the playing with Stillson and monkey wrench, as I did with a helper and A. P. Sloan during our early experiences with the W. M. Wood Ice Machine Company. Our exercises usually came during the dark hours through the night when customers and proprietors were comfortably resting in bed. We have here 14 orange trees and one grapefruit tree in the yard. They keep us well supplied with juice. A neighbor, Mr. Briggs, has an entire block across and to the right of us. It is about 200 by 800 feet, with a small Cape Cod style cottage. The place is filled with citrus trees. On our first meeting we found that we had friends in common. He was with Henry Ford when I was doing the rounds of automobile, truck, and tractor plants in 1913-1918. He knew many of the engineers and plant managers that I kept in contact with when I pioneered the use of cork gaskets and pressed steel for motor bottoms and cover plates. One of our great treats here is the variety and great number of birds. The rear yard has a row of hedge, scrub oak, and ground pine. With the pedestal water basin, a 12-bush rose bed, 10 pounds of feed a month and a feed stand I built, we keep them friendly.

"Immediately on our arrival in St. Petersburg we got in touch with the Clark folk. Joe bought a nice house, and it seems to suit their needs quite well. Katharine has quite a number of kinsfolk in dear old Alabama, so the two or three extra bedrooms will come in quite handy. Joe has a two-car garage. However, one half of it is filled with a big work bench and a lot of surplus furniture. As bedded guests would have to leave their car at the curb through the dark hours of the night, we could not make use of a bedroom. There is a regular racket going on around here, especially in Tampa and St. Petersburg. A swift hand and a screw driver deftly removes the rear offside hub cap. They are then put on the market at the main street hardware stores,

without shame or concern, at a premium price — 'for all make of cars.' Town authorities also seem unconcerned. It is a good beginning to initiate juveniles into the crime circle. We attended a Sunday dinner party at a large and prominent home in Tampa in November. Our cap was missing when we returned here, and no detours. None were to be had at car agencies, service repair shops, or graveyards. So our rear left hub rolled in the cold for weeks. Then I wrote Abby's niece's husband. He is general manager of General Motors and vice-president of General Motors Corporation. He had not been in his office for three weeks, but after three weeks one came from the supply division of General Motors in Atlanta. They had plucked it from a company car. Now if this strike continues, what safety have we for our cars? We see Joe and Katharine at the biweekly concerts of the Carreno Club in St. Petersburg and frequently bump into one another on downtown errands.

"I have seen Irv Merrell but once. I go over to St. Petersburg on Wednesdays to warm up the old vocal chords with Mrs. Helen Hill Winchester. She was born and raised in the north part of Massachusetts and began her musical career. She plays in concert and at hotels and for many choir singers. Their small cottage, her studio, is at the rear of a big lot on Fourth Avenue near Fourth Street. In the big house they have 14 rooms with single and shared bath. We had thought of having a room there, but the doctor said too much conversation and arguments with groups of people would be bad for Abby. Oh! I mean for Abby to listen to. She hears the same theme repeated when I am up on the platform. Soon after we arrived, I took out fire and burglary insurance in Irv's son-in-law and sons' office, but missed Irv. He comes in on Tuesday and Friday mornings. Well, we did not click, so I telephoned him shortly after we got settled here and learned that Mrs. Merrell was too ill for visiting. Then several weeks later we had an odd date over in St. Petersburg on a Friday, and we saw him across from where we had parked. Mrs. Merrell had undergone a gall-bladder operation the week previous, and her condition was not very assuring to Irv. I told him that my experience with Abby had been about the same in 1937, but that she had come through in a splendid and much improved way, after two periods at the parting line. I think it encouraged him some. About three weeks ago, I was at a concert, and I met the mother of the wife of one of Irv's sons. He had been a steward with one of the big air lines at a station near Rio, Brazil. Then Abby and I talked with Irv last Wednesday. Mrs. Merrell was home and seemed to be getting along quite nicely.

"I can only say that shopping errands and our Wednesday visit to St. Petersburg, washing five years of accumulated dirt and scum from the windows, sash, and frames of windows in my room, and most of the morning watching the installation of a sleeve collar insulator on the car steering post, and a tired-out loaf mixed with intervals of reading and sleeping on the bed almost all of yesterday, put me back in punching shape for today. Then friends from Malden arrived in Clearwater at the ungodly hour of 6:45 A.M. yesterday. We

were there soon after 6:30 but the darn train was 50 minutes late. They had expected a reception delegation from the hotel and were quite surprised to see us, their old friends. They were here this morning. The hotel proprietor said there was a party the night before, and the porter failed to give the awakening knock. I wonder if the porter drank the leavings. As ever, asking for forgiveness, Con—Abby won't let me sign her name." — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge 39, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge 38, Mass.

1897

At last the Class has the honor of having a boat named after one of its living and active members. On May 22, James Killian '26 of the Institute christened a new racing shell the *H. E. Worcester '97* after our jovial classmate, who for many years has been a member of the advisory council on athletics at the Institute. The ceremony was performed in the traditional manner, by breaking a bottle of champagne on an iron bar held above the bow of the shell. The photographic cut published in the *Boston Herald* of May 23 shows the genial Harry watching the proceedings with a smile on his face that indicated how much he appreciated the honor.

At a meeting of the Lowell Textile Institute alumni association held at the Boston City Club on May 18, Charles H. Eames, VI, president emeritus of the institute, was presented with a gold watch in token of the esteem in which he is held by the alumni. Dr. Eames retired in 1945 after 41 years of service.

Thomas F. J. Maguire, VI, died on May 12, at his home in San Diego, Calif. Mr. Maguire went to San Diego from the Navy Bureau of Yards and Docks in Washington, D.C., in 1920 when the 11th Naval District Headquarters was organized. He retired in 1942. He leaves a widow, three sons, two daughters, four grandchildren, one brother, and two sisters. Burial was in San Diego. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

1898

When the Blanchards said good-by to Paul Johnson as they left California on March 8, Paul was his usual cheerful self and took a great deal of interest in advising them the best route to follow. Indeed, he seemed to be gaining. But soon after that his heart gave way completely, and he died peacefully in his sleep in the morning of March 19. We quote extracts from the Pasadena papers. The title captain is nautical, he having taken out a captain's papers to navigate his own yacht. "Captain Johnson and his family had made Altadena their home for the past 31 years. He was an honorary member of the Altadena Chamber of Commerce, the Altadena Welfare Board, and stockholder in both Rubio Canyon and Las Flores Water Companies. Other organizations of which he was a member included Pasadena Rotary Club, the University Club, Sons of the Revolution, the Ancient and Honorable Artillery Company of Boston, California State Humane Association, Los Angeles Athletic Club, Automobile Oldtimers, Sierra Club,

Horseless Carriage Club, Wilderness Society, New England Historical and Genealogical Society. Scientific associations in which he was interested were the Electric Club, the Astronomical Society of the Pacific, the American Society of Mechanical Engineers, and the American Geographical Society.

"Few men have as fully led a life of service to humanity as has Captain Johnson, his interests and inventions leading to such achievements that America's everyday life has been affected. Early experiments in radio were influenced by his inventive genius. His scientific career was launched following graduation from . . . Technology, when he entered the family business, Johnson Service Company of Milwaukee. His father had invented thermostat heat control, and his son invented important perfections of it. He also devised an accounting system. At the time of his death, he was treasurer and a director of the company. In the radio field, he assisted his father, Professor Warren S. Johnson, and Charles L. Fortier, in wireless experiments for which a silver medal was awarded at the Paris Exposition in 1900. Working alongside of Dr. Lee de Forrester, an assistant of his father's, Captain Johnson conducted many experiments in wireless. He owned the first wireless station west of the Atlantic Coast at that time, and later owned and operated station KGO, a pioneer radio station established in 1922 here in Altadena. The call letters were later assigned to an Oakland radio outlet.

"His pneumatic Johnson clock placed in the tower of the City Hall in Philadelphia, launched the 20th Century, when he started its mechanism at midnight, December 31, 1899. While installing this job he made the acquaintance of Hannah Foulke, [whom he married in 1900.] . . . In recent years Captain Johnson became greatly interested in the Johnson Genealogy, having carried on extensive research throughout the nation. At the time of his death, he had already compiled 22,000 names belonging to the family tree. Instructions of Captain Johnson include the setting aside of sufficient money from the estate to complete the work at which he had so zealously occupied himself during recent years.

"During World War I, Captain Johnson served his country as an aeronautical mechanical engineer at a naval aircraft plant in Philadelphia. At the opening of World War II, Captain Johnson was an enthusiastic aquatic sportsman, owning the yacht 'Seyelyn,' in which he cruised many times along the Pacific Coast. Participating in many yacht events, his den at home provides the setting for cups and awards presented to him as a result of winning such races as the Long Beach to San Francisco race. He was staff commodore of Balboa Yacht Club. Surviving Captain Johnson are his widow, Hannah Foulke Johnson; his son, Seymour F. Johnson, and his daughter, Mrs. John W. Bates, all of Altadena; and four grandchildren."

From the above quotation it is very apparent that Paul Johnson was a public-spirited citizen of wide interests and great energy. Although he was almost totally deaf in later years, he did not allow that handicap to hamper his many activities. He took great interest in horticulture, and on his place were many rare specimens of

trees, shrubs, and fruits. He had a couple of well-developed cork oak trees and quite a plantation of young trees, and he was co-operating with the state in planning to develop a cork industry.

Homer E. Sargent, who has for many years lived in Pasadena, sent us clippings concerning both Paul Johnson and Samuel Fosdick Jones. Two of our classmates named Jones, Harold Wellington and Samuel Fosdick, both graduates of Course VII, became physicians and both achieved nation-wide prominence. The last we heard from Harold W. he was well and active and in charge of the Army Medical Library in Washington. We quote from the obituary of S. Fosdick in the Pasadena *Star-News* of March 25: "Dr. S. Fosdick Jones, 71, physician and surgeon who had resided in Pasadena since 1930, died [on March 24] at a Los Angeles hospital after a lengthy illness. . . . His home for several years had been at the Hotel Huntington here. Born in Cincinnati, O., Dr. Jones attended Hill School and . . . Technology, then entered the College of Physicians and Surgeons, Columbia University, from which he graduated in 1902. In 1906, because of ill health he moved to Denver, Colo., where he practiced medicine from 1906 to 1930, when he came here. He is survived by his wife, formerly Mary Katherine Cordes, whom he married in 1910. Among the organizations of which he was a member were the American College of Surgeons, the American Orthopedic Association, Western Surgical Association, New York Pathological Society and the Congress of American Physicians and Surgeons. He was professor emeritus of Orthopedic Surgery at the University of Colorado, and also was a member of the California Club at Los Angeles."

We have had notice of the following deaths: George D. Huntington, I, of 520 Neff Road, Grosse Pointe, Mich., died on January 9. His wife adds: "He was always interested in every new development at Technology, though distance and a large and expensive family kept him from doing much about it." Edward D. Kramer, I, of 107 South Plum Street, Troy, Ohio, died on March 21, 1945. Miss Minerva A. Laing of 302 Groves Street, Chicopee Falls, Mass., died on January 12. Albert E. Sargent of 20 Howard Street, North Weymouth, Mass., died on February 5.

It is very gratifying to receive a letter like the following from Ernest Bragg: "When my copy of The Review comes, my first interest is to turn to '98 and read the news of the Class. The notes in the March issue were particularly interesting. One of the rosy recollections of Technology is my memory of Frank Coombs, of whom you speak as being an older member. Another classmate of whom I cherish fond memories is Edgar Weimer, who, if I read correctly, will attain the age of 71 on December 19. It may be of interest to mention my birth date, October 25, 1869, which may mean that I am the senior member of '98. If so, I am pleased with the distinction, as circumstances beyond my control prevented my being with the Class for the full course. Charlotte A. Bragg '90, my aunt, was the one who influenced me to enter Technology with '98. My oldest son, Leslie B. Bragg '25, X, XV (S.M. '29, Sc.D. '33), completes three generations of us who have

attended the Institute. My youngest son, Ernest A. Bragg, Jr., a captain in charge of the X-Ray at Fort Oglethorpe, Ga., you met with me at the last class dinner which I was able to attend. I have also two daughters and thus, I think, a family of the same size as yours. At the present writing I am seriously considering retiring from service with the Draper Corporation, for which I have worked nearly 47 years. If I carry out my intentions, I shall have to busy myself with my hobbies — photography, paintings, of which I have done about 100 in the last three years, and writing, having several books under way."

These notes are compiled by the retiring Secretary, who had lunch and a long talk with Ed Chapin on May 20. Ed is taking over the secretary's duties from now on. Ed reported that he had a visit lately from George Anthony, who was on his way back from Belfast, Maine, where he had been visiting his daughter and her family. George was interested to learn all about '98 men in this district. He himself was fit and vigorous; he has retired from business and bought a farm somewhere upstate in Michigan.

An unmistakable picture of Ed Chapin caught our eye recently in the *Boston Traveler*. He was caught by the photographer in a parade of the alumni of the Boston English High School on its centennial (or perhaps 200th anniversary). George Cottle, as well as Ed, attended this celebration. — EDWARD S. CHAPIN, *Secretary*, 114 Federal Street, Boston 10, Mass.

1899

H. C. Greer of Morgantown, W. Va., President of the Greer Steel Company of that town, sends a bit of history relating to the life of William Barton Rogers. While Rogers was professor of geology at the University of Virginia, he made the first geological survey of portions of West Virginia, which was then a part of Virginia. But let Greer tell his story: "There were a good many charcoal blast furnaces scattered through this country, and Rogers visited them all. He gave a brief description of each furnace and its ore supply and a description of the characteristics of the plant. He visited one blast furnace at Bruceton, Va., and after describing the furnace in his customary manner, added a footnote to the effect that 'It is reputed that this furnace was built with capital consisting of a water barrel of whiskey and a counterfeit 10-dollar bill.' I have never forgotten this quotation, because it is evidence that we had some high financiers in the early days of this country, as well as at the present time." — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston 9, Mass.

1900

Bill Hart writes in from Montreal that he has in mind attending the reunion of his high school class at Hyde Park sometime in June. Joe Draper is back in his office after an enjoyable winter at Palm Beach and over the telephone said that he felt very much improved.

The Register of Former Students received word from Oliver A. Batcheller that his father, James H. Batcheller, had passed away on April 20 at Corvallis, Ore. This

was indeed a shock; around the first of April, Jim had written in for the latest information on the exact date of the June reunion, as he was making plans for a trip from Corvallis, Ore., to take in the festivities, and his letter appears in the June Review. For the last five years Jim had not been in the best of health, as a case of pneumonia contracted in 1941 had left him in poor condition. Careful attention to his health, however, had brought him back in pretty good shape, as is evidenced by his plans to come on this year. Jim was the best correspondent of the Class, and his cheery and interesting letters always found many readers. From 1926 up to the time of his retirement, he had been professor of mining engineering at the Oregon State College at Corvallis, Ore. He was a member of the American Institute of Mining and Metallurgical Engineers, the Mining and Metallurgical Society of America, the University Club of Portland, Ore., the Rotary Club of Corvallis, and the Eastern Oregon Mining Association. Four sons survive, Mrs. Batcheller having died in 1937. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston 9, Mass.

1901

I report with regret the death of Harry W. Maxson in Westerly, R.I., on last October 31. No further information about him is available at this time, except that he was retired. Also that of Frank D. Rash in Louisville, Ky., occurred on April 18.

The following letter was received from Charles H. Alden '90, fellow of the American Institute of Architects and an architect in Seattle, Wash.: "The Review has announced the death of William J. Sayward, but there was no mention of him in class notes. [Note: William Sayward's death was reported in the 1901 class notes in the April issue, or at about the same time this letter was written.] I knew him very well, and he seemed to me a particularly fine example of what Course IV at the Institute could produce in architectural training. He had a thorough knowledge and appreciation of the fundamentals of construction, as well as aesthetic expression, which make ideal equipment for an architect. I worked with him when he was practicing architecture in Seattle eight or ten years after his graduation from Technology. He was so quiet and unassuming that his real value as an architect was slow in getting the recognition it deserved and appeared only later after he had established himself in Atlanta, Ga., in the firm of Edwards and Sayward and later Sayward and Logan. He then produced a considerable quantity of work of recognized merit, was honored by the American Institute of Architects by being made a fellow, served on the institute's board of directors, and was afterwards elected vice-president. He was an earnest worker and at all times a sympathetic and pleasant companion. He had not only won distinction in his profession but I feel sure he will be remembered with affectionate regard by others besides myself who had the privilege of knowing him."

The death of Ellis Lawrence was reported in the June issue of *The Review*, but a clipping giving additional information concerning him has been received from Glenn Stanton, who pays special tribute to Lawrence by saying that he was a national

figure in his profession and a leader in architectural design who left a noble record of public service. Last January the Builders' Exchange unveiled a bronze bas-relief portrait of the Dean with appropriate dedicatory services in appreciation of his founding of the organization. He was also instrumental in the establishment of the Oregon Building Congress, a clearinghouse for all building interests, which fostered a creditable apprenticeship system and encouraged fine craftsmanship, so that the dignity of labor was recognized as never before in the Portland community. Finally Stanton, who received his degree of master of architecture at Technology in 1921, refers back to the fact that he was one of Dean Lawrence's first students at the University of Oregon and says he will always be grateful for having known Lawrence.

The clipping mentioned above reads: "Dean Ellis Fuller Lawrence, 66, dean of the school of architecture and allied arts and partner of the Portland architect firm of Lawrence & Lawrence, died [on February 27]. Dean Lawrence became ill at the University Faculty club where he made his home in Eugene and died en route to a hospital. Dean Lawrence has been a member of the university faculty since 1914 when he joined the staff as a professor. He has served as dean of the school since 1932. He was born November 13, 1879, at Malden, Mass., and attended school at . . . Technology, receiving his baccalaureate degree there in 1901 and his master of science degree a year later. In 1905 he traveled extensively in Europe and studied in Paris. He was a member of the American Institute of Architects and served as president of the Oregon chapter of that group at one time. He belonged to the Pacific Coast League of Architects, Oregon State Teachers association and the Association of Collegiate Schools of Architecture. He served also as a member of the Portland city planning commission. He had practiced architecture in Portland, Maine; Boston, Mass., and Portland, Ore." — GUY C. PETERSON, *Secretary*, 788 Riverside Drive, New York 32, N.Y. THEODORE H. TAFT, *Assistant Secretary*, Room 3-266, M.I.T., Cambridge 39, Mass.

1905

Indications are that the 41st (or delayed 40th) reunion at East Bay Lodge, Osterville, Mass., on June 21 to 23 will be successful, at least from an attendance standpoint. At this writing, a month in advance, there are 40 acceptances, including 18 wives. A more detailed announcement of the program, transportation accommodations, and so forth, will be made later. Last minute reservations can be taken care of.

H. Hoffman Kennedy, IV (present address: 26 East 35th Street, New York 16, N.Y.), has finally yielded to my urge to give us what I knew would be an interesting story of his life in France, past and future. Here it is: "You drew a touching picture in your letter of December 11 of 300 classmates yearning for news of my war activities and of my plans. You will perhaps remember that I came back from Paris in December, 1939, and in the next May opened an office, in New York, for the sale of French antique furniture, getting two shipments from our Paris shop before the Germans closed in. Singapore fell early

in 1942, and realizing that the war would be long and hard for everyone, I closed the office, consigned my stock to other dealers, and looked for a war job — not so easy. In Washington, the Navy Department of Yards and Docks turned me down promptly and firmly; airplane factories were not interested; by a streak of luck, a letter of introduction to the president of the Lawrence Aeronautical Corporation in Linden turned the trick, and I plunged into the mysteries of screws, studs, gears, and engines. To my surprise, I even got several advances. By June, 1944, however, commuting and bus problems in the country had me down, and I changed to the Bell Telephone Labs in New York to draw, Chinese fashion, circuits and schematics. You might think that this would have finished me, but no, I held out until I was released in November, 1945, and a good rest in Virginia and Baltimore set me up again.

In January, 1946, the situation was as follows: no shop, no loft, no cellar to be rented; architects skeptical about a man who had not worked here since 1912; impossible to go back to Paris, even if I had not feared the encouragement to my neuritis from the penetrating cold of unheated stone buildings. So, I puddle along buying like a crazy sailor, cramming furniture into my three rooms until some day I shall only be able to burrow a hole to sleep in, or consigning to other dealers fortunate enough to have shops. In August, I shall have to burrow two holes, as I hope to get my French partner over to feed him up a bit. He has been sending me good news since the Germans were booted out of France: stock in the shop, Rue Bonaparte, is intact, as are also my few securities in safe deposit. Through the kindness of Mr. Dean Jay of Morgan and Company, my power of attorney reached him in the fall of 1940, and he immediately changed the name of the firm and ran considerable risk in putting all my property in his name. He had managed somehow to hide in a cave along the Loire, belonging to a cousin, the more valuable furniture, tapestries, old silver, and other objects of art from my house in Seine-et-Marne. These are now all back in Paris. The Germans took most of the furniture remaining in the unoccupied house, paying 35,000 francs to my partner. Some was stolen and later partly recovered through the aid, ironically enough, of the German administrator of the region, in a rather pitiable state, however: the German officers had moved my Sixteenth Century furniture and point chairs into the garden to eat at their ease under the trees. In 1945 the German troops arrived again with 67 trucks laden with furniture — the Americans close at their heels — and cleaned out what they had overlooked in 1940. My partner's family live close by, and several days later his sister-in-law was petrified by seeing six German privates rap on the kitchen door, stacking their guns. Her legs carried her as best they could into the garden to fetch her husband, who asked what they wanted. 'To surrender,' they said, and soon an American noncom, summoned by telephone, 'captured' them and marched them off. The sister-in-law has since recovered her spirits so far as to write that she 'would appreciate a pair of nylon hose.'

She is English and night after night during the war had the agony of hearing German planes take off from the near-by airfields to bomb England. I send them packages of food as often as I can, but unfortunately cannot send what they yearn for most — meat.

"There, my dear Goldthwait, use your editorial scissors as you wish, only don't repeat what the Bulletin, finding nothing very distinguished in my career, said in 1940 — that I had been profusely decorated in Europe for my efforts toward world peace. In the interim between the two wars, the Germans were the noisiest propagandists for disarmament and peace to keep the Allies fooling around while the Germans armed in earnest. And they will again. . . . Have you a firm confidence in the stability of our national character and policies? Think how quickly our armies in Europe have been disorganized and our prestige, won by force of arms, lost by the pressure of mothers and sweethearts and the men themselves on Congress. Have we really, finally, won the war? The Russians, good psychologists, seem to have taken advantage of the situation. I, for one, shall feel easier when there is a possibility of a World Government and, while waiting for that, a strong military alliance between England and America."

The New York Times of May 1, 1946, carries this well-deserved tribute to our reunion photographer: "Louis E. Robbe, tunnel expert on the Board of Transportation and its division engineer in charge of construction, claims and adjustment, retires today after forty years' service in World Wars I and II. At a buffet luncheon yesterday at the board office, he received a brochure of his career. A graduate of . . . Technology, Mr. Robbe started his career with the construction of the Pennsylvania Railroad tunnels under the Hudson River, then worked for the Board of Water Supply, and started with the Board of Transportation in 1926 as section engineer in the construction of the East River tunnels at Fifty-third Street. He was acting division engineer at the building of the Sixth Avenue Subway."

Did you get our Class Agent's April bulletin regarding the Alumni Fund? And did you enter the Mammoth Contest? Andy Fisher did and won a prize. Whether it was first or booty prize, I dare not say for fear of spoiling Perk's classification, but Andy is extremely fond of it; he wore his best suit the next day in honor of the gorgeous necktie. We wonder whether Perk will use Andy's ideas in the next appeal.

Roy W. Wastcoat, VI, passed away at his home, 29 Ellington Road, Wollaston 70, Mass., on February 9. — FRED W. GOLDTHWAIT, Secretary, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, Assistant Secretary, 71 Newbury Street, Boston 16, Mass.

1906

The class notes in the May Review referred to the 1946 reunion and stated that it was hoped that by the time the notes were read by classmates plans for the reunion would be completed. As a matter of fact, the time and place of the reunion were not definitely established until April 29. Notices were sent to classmates early

in May, and at this writing (May 23) it would appear that our reunion, to be held at East Bay Lodge, Osterville, Mass., from June 27 to 30, will be a successful party. By the time you read this, of course, the reunion will have come and gone. A complete account will be included in the next issue of The Review published in November. One of the advantages of a reunion is that the correspondence incidental to arranging it brings letters which make good material for class notes. Some of the following items may be traced to this origin.

A letter was received from Sid Carr, VI, dated Honolulu, April 23, and reading as follows: "I have written the Alumni Association to inform them that I am retiring from active business and to give them this change of address: care of Wells Fargo Bank and Union Trust Company, 4 Montgomery Street, San Francisco 20, Calif. I have lately completed 30 years of service with the Hawaiian Electric Company, Ltd., and it is my intention to take life easy from now on. Mrs. Carr and I are sailing from Honolulu on the S.S. *Lurline* on May 17. We shall spend about one month in San Francisco and then drive north in our automobile to Victoria, British Columbia, where we shall stay until about August 15, then proceeding east by automobile to visit my brother Wallace in Buffalo, N.Y., until after Thanksgiving. From there we shall drive south through the New England states to Philadelphia and spend Christmas and New Year's with my wife's brother, Francis H. Forsythe. We should be passing through Boston the latter part of November, when, of course, I will call and see you. After the New Year we intend to drive through the southern Atlantic states to Florida, where I hope to do some fishing. We plan to start west sometime in February, probably traveling through Mexico, and to arrive back on the Pacific Coast about April 1, 1947, when we shall begin looking for our permanent residence on the Coast. I hope to see Philbrick in Hartford and perhaps some other classmates, en route. I notice that the annual Alumni celebration is this year scheduled for June 8, and I am awfully sorry that I shall not be able to make this date, especially as it will be the 40th reunion of our Class. At any rate, please give all the boys my best aloha, and I'll be thinking of you all while in San Francisco."

Stewart Coey, VI, is now writing his letters on the stationery of the Air Research Associates, consulting engineers for air conditioning, air sterilization, and humidity control, with offices in Newark and New York. Stewart has a married daughter living in Wellesley, Mass., and is now a proud grandfather. He visits Wellesley occasionally and is very thoughtful about getting in touch with the Secretary by telephone on such visits. — Charles F. Willis, III, has retired from active management of the *Mining Journal* in order to devote his full efforts to work as secretary of the Arizona Small Mine Operators Association and to public relations work for the mining industry in Arizona and Washington, D.C. The *Journal*, published by Mr. Willis since 1920, has been purchased by the Miller Freeman Publications of Seattle and San Francisco. Mr. Willis will be editorial consultant to the company, with some work along public relations lines.

"Patchwork" is the name of the publication of the E. L. Patch Company of Boston, Mass., of which our classmate Ralph R. Patch is president. The following is taken from the January-February issue of that publication: "It is seldom that we have an opportunity to write anything for 'Patchwork' about our President, Ralph R. Patch. Ordinarily we respect his modesty, but this time we are going to take advantage of his absence on a trip to Florida and print a story for historical record and for the benefit of his many friends among our readers. In 1923, Ralph Patch accepted a commission as Lieutenant Colonel in the Sanitary Corps Reserve, taking an active part in the preparedness program so effectively conducted by the Surgeon General's Office. As war became imminent these activities increased and on December 13, 1942, Lt. Col. Patch dropped his business responsibilities and entered upon active Army duty in the Office of the Surgeon General, where he remained until his return to inactive status a few months ago.

"On December 10, 1945, at the Mid-Year Meeting of the American Pharmaceutical Manufacturers' Association, Lt. Col. Patch received an award of distinction from that association, before a distinguished gathering of business associates and Army officials. Following an address by Col. Charles F. Shook, M.C., representing the Medical Department of the Army, Mr. S. DeWitt Clough, President of Abbott Laboratories, on behalf of the association, presented the award, which reads as follows: 'This Award of Distinction is presented to Lieutenant Colonel Ralph R. Patch in recognition of his patriotic contribution to our country during World War II, in the Supply Service, Office of the Surgeon General, United States Army by American Pharmaceutical Manufacturers' Association in New York City, December 10, 1945.' Space will not permit the printing here of all of the words of tribute which were spoken and to which Col. Patch responded in his usual modest manner. The closing paragraph of Col. Shook's address indicates one of the characteristics that made Ralph Patch's services valuable to the war effort, in the many tasks assigned to him. Col. Shook stated: 'There is a notation in Col. Patch's record which sums up his successful military career and shows why his services brought results: "He did not take 'No' for an answer." This may be the reason why his services during the trying production era of World War II were outstanding. They did credit not only to him but to that grand loyal industry with which he has so long been associated.' Among other things relating to Col. Patch's war contribution, Mr. S. DeWitt Clough said: 'Col. Patch has rendered to industry and to his country invaluable services as Chief of Liaison between the Army Medical Purchasing office in New York, the Office of the Surgeon General in Washington, as well as other services of the Army and other agencies of the Government in Washington. His aid in solving manpower and labor supply problems for the pharmaceutical and allied industries has been outstanding and will never be forgotten.'"

The following came from Youngstown, Ohio, written by James L. Wick, II, on April 30: "This isn't a voice from the grave, but it might be! I hope you won't have an

attack of apoplexy when you learn that I am considering attending the Alumni Day celebration on June 8. What is that — a 40th anniversary? I've gotten out the senior portfolio and am looking at your pictures. I should appreciate it if you would send along to me any information that I should have about the plans for the Class. I shall probably be in the vicinity of Boston from about the 31st of May on and over Alumni Day. Some years ago I built a house at Pigeon Cove, overlooking Sandy Bay, and have spent every moment that I could spare down there. You will be interested in knowing that one of my daughters, Emily, is entering the graduate school at Technology this fall. She wants to knock off a Ph.D. in Chemistry. Two of my daughters have been graduated from Mount Holyoke and one from Vassar. My son was graduated from Williams and from Exeter College, Oxford. He has been with us here at the foundry for the last two or three years, but has now been called back to Chicago University as an associate professor in philosophy. Your humble servant has the privilege of acting as honorary secretary-in-residence for this district. He has had a thrilling experience interviewing all the boys here who want to enter M.I.T."

Our Class Agent, Henry Darling, III, is very much interested in making an unusual record in obtaining generous contributions to the Alumni Fund in this our 40th year after graduation. The annual report of the Fund for the year 1944-1945 showed a quota for the Class of \$2,850, of which \$2,097, or 74 per cent of the quota, was actually subscribed by 114 contributors. Incidentally, 1905 subscribed 346 per cent of their quota; while 1907 gave 106 per cent of theirs. Classmates interested in the Institute — and we all ought to be — are making a special effort this year to give generously. Class affairs have been conducted on a modest basis and, with the exception of the Alumni Fund, classmates have not been canvassed for donations. Why not celebrate our 40th anniversary by giving at least twice the usual amount in order that the Class may make a showing worthy of the achievements of its members? Remember to read the November Review for a full account of our 40th reunion. — JAMES W. KIDDER, *Secretary*, Room 801, 50 Oliver Street, Boston 10, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

1907

During April of this year, having received word from the Alumni Office that the permanent address of Samuel Rogers Taylor Very had changed from Warehouse Point, Conn., to Route 6, Box 763, Tucson, Ariz., I wrote to Sam seeking one of his unique letters, samples of which I have reproduced occasionally in The Review during the past years. Kindly and promptly did he reply, under date of May 12, and I quote: "It was nice to hear from you, though I had hoped to elude forever those insatiate, sleuthlike, class-news-seeking maws. . . . I am now living in the lovely plateau of Tucson's country environment close to the romance of our amazing Southwest: the mountainous fastnesses of the Apaches, the desert pastels of the Papagos — fierceness mixed with calm. Nearer than either, if you like sport of the sort, which

I do not, you can hunt in season the savage javelina and that lidless old predator who, alone of all venomous vermin, is decent enough to give warning when about to bite — the diamondback rattler. You don't have to hunt here to secure the end of hunting, that is, the death of these or any other 'apachu' (enemy) as nature takes care of that in her gentler way, a way that is very lovely if you don't philosophize too fully. For there is no form of savage here that another form can't conquer, and some of the battles are dramatic beyond my ability to recount. For instance, that old rattler can't hold up to certain of our wilier spiders, and I myself have seen the zygodactylous *Geococcyx californianus* go about that business in a more romantic way. What's that? You forget what a zygodactylous *Geococcyx californianus* is? Why, a *Geococcyx californianus* is the common *paisano*, a large terrestrial bird of the family Cuculidae, the ground cuckoo, chaparral cock, or road runner. And he is a good road runner because he's zygodactylous, having his toes arranged as 100-yard sprinters ought to arrange their toes, two in front, two behind, for speed, and as a serpent hunter finds practical when jumping upon the back of his victim's neck. Very interesting to see the road runner do such dancing. . . .

"Perhaps you would like better, to take a trip through our thorny desert and get away to hills — say, the juniper country three hours' ride from our door; and I don't mean the hedge which gave us the gin berries in prohibition years, I mean the 'incensed' firewood juniper, that little old cedar of many uses which sometimes grows to be so aged — a thousand years, some say. It's a cedar with wood as red as Arizona copper. . . . A few hours farther and you'll go higher, to the real mountains — 'white' they are called; and you pass, even on days that are 100 degrees F. on the thorny desert, drifts of clean white snow 10 feet deep, that whiteness the cause of the name of those green-clad, lovely, game-filled mountains. Oh, their air! Oh, their perfume! Oh, their trout brooks and their mule deer, bounding four, six, eight, yes, even 10 feet high into the vast arc of surprise as you pass by on the pine needles, among quakeless aspens. Why quakeless? Why asps? You don't seem to know very much about the philology of the Southwest! I once asked someone what similar trees were in southeast Canada, and he said, 'Them? why them is popples.' 'Popples,' I said, 'what are popples?' I learned later that they were poplars. But here they are quaking aspens that don't quake until the leaves come out. Fortunately for us, this hadn't happened last week, as we saw, between their slim trunks, some soft-eyed blacktails after they had bounded an Eratosthenes stadium away from us, and had turned to let the sunshine filter through those ridiculous jack-rabbit ears. . . . If you decided to go to that 7,500-foot elevation with us, you'd see comely flocks of coming and going turkeys, abundant now, though there was a time, within our residence in Arizona, when it was feared that they had been exterminated by their 'apachus,' us whites. 'Lovers of wild life,' we are dubbed. What lovers!

"These are only some of the attractions which have at last anchored me to one spot in our wonderful world. Perhaps it is the

combination of acceptable calm, which is the desert, with the diurnal climatic variety, which is different from anywhere else in this Southwest; for it is not uncommon to have a daily change of temperature, for months at a time, of more than 40 degrees. Add 40 to 32, which is a low night temperature for most winter months here, and you get shirt sleeves — the 'liberty' referred to by Jefferson in the Declaration. We have other things, too — 'life' beyond the wildest dreams of an Easterner enslaved by death-engendering money making; and as to the 'pursuit of happiness,' I know no two persons here who invoke a common formula. You can work here where we live in the life-giving sun, with a hoe in your hand, if you like, dressed like Man Friday after a shipwreck, and bear in mind that he paid very little for clothes. Result: even a Micawber could get along without a fancy income. Or, if you feel it essential to live in the same old manner that you did after you hung up that diploma in your office in the East, why not? Our house is as cool as you like all summer, regardless of outside temperature, by the simple prestidigitation of a blower. Yesterday our guest room was 74 degrees F. when it was 90 outside. This is possible in our arid Southwest by virtue of the low humidity. I've seen it down to 4 per cent. . . .

"Desert? Yes, we live in the desert. Why not? The desert is a delightful place. The chief difference between it and a New England bowling green is water, and fortunately for easterners gifted with wanderlust, there's an abundance of water, nowadays, in the desert of the Southwest. We have an acre of property requiring much water: trees, shrubs, lawns, vines, plants galore. We have a normal dwelling establishment of six, eight, or ten rooms, depending on that New England conscience, for some are kitchen-bath-garage rooms, and some are bed-living-dining rooms. One of them that requires water is our poultry house, and all the population of these rooms require more water than the same living organisms in the East. . . . Mind you, I am not propagandizing Tucson; it's an awful place if you find it so. I happen to like some of its peculiarities: for example, its thorns. The chief trees on our little acre are thorny catclaws, thorny mesquites, and other acacias; our chief plants are the *Opuntia*, the *Cereus*, the cholla, all cacti — all thorns. But what of it? Roses have thorns. And so has life. . . . I've grown young again in this Southwest and am going to practise architecture once more. . . . Are you satisfied, insatiate one? At any rate, thanks for listening. I really was flattered to hear from you, and I liked your thought of me, and your letter."

I have received two letters from Milton MacGregor since he returned from his Midwestern trip during the winter. He said he had had a delightful visit with Ed Story in Allentown, Pa., and thinks he may have persuaded him to attend our 40th reunion in 1947. Fine work, Mac. That sort of personal missionary work will win more men to live interest in '07 gatherings than any amount of general letter writing by me. I commend that kind of effort to all you regular attendants at '07 reunions. Select some mate whom you know well who needs "converting" and work on him for the next 10 months, and we'll make our

40th what Sam Marx, in a letter to me on May 13, said it must be — "something extraordinary." Sam also spoke of being with Stud Leavell for a month in Palm Springs, Calif., during the past winter, and of seeing John Frank on an average of once a week. Having architectural projects from coast to coast, Sam keeps on the go all the time.

Coming back to MacGregor's letters, he wrote of his learning about and setting out cranberries, blueberries, raspberries, and various vegetables at his new place on Cape Cod — Lower Road, Brewster, Mass.; also of attending a cranberry meeting and learning that Chet Vose, our professional cranberry expert, who has been ill as the result of a shock suffered many months ago, has been able to attend many of these meetings recently and to take part to some degree in conversations.

Clarence Howe, Minister of Reconstruction and Supply for Canada, in a letter dated May 7, with which he enclosed his contribution to the Alumni Fund, said that he will look forward to attending our 40th reunion in 1947, suggesting that a session of the Canadian Parliament at that time would be the only thing that might prevent his being with us. I am delighted at the numerous expressions of active interest in our reunion, about 11 months ahead at the time you read this. We'll do the necessary work and planning here. All you have to do is to attend. As Sam Marx suggests in his letter previously referred to, we are getting along in life, and I suppose that between 1947 and 1952 the law of averages will work against the continuance of life in this world for all of us. So 1947 is the year for a record '07 gathering at our favorite Oyster Harbors Club. — BRYANT NICHOLS, Secretary, 23 Leland Road, Whitinsville, Mass. HAROLD S. WILSON, Assistant Secretary, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

Our fourth and final get-together meeting and dinner of the 1945-1946 season was held in the Silver Room at Walker Memorial, Cambridge, on Tuesday, May 14, at 6:00 P.M. The following classmates were present: Sam Hatch, Myron Davis, Steve Lyons, Toots Ellis, George Freethy, Bill Booth, Linc Soule, Winch Heath, Linc Mayo, George Belcher, Jeff Beede, Harold Gurney, and Nick Carter. Henry Sewall, Stiles Kedy, and Fred Cole had hoped to be with us, but couldn't make it. It seemed rather good to be back at Walker again for our meeting, and we have the Walker Memorial Dining Service to thank for a wonderful dinner, served promptly and efficiently.

Myron told us of the progress of his gardening at Marlboro, and Steve wondered whether any of us had gold pieces, which he said could be sold at a premium of 75 per cent. Bill Booth told us a little about the spring convention of the American Marketing Association, which was to be held in Boston from May 15 to 17 at the Hotel Statler. Bill, who is market analyst for the Foxboro Company, is president of the Boston chapter of the A.M.A. and was to be toastmaster at the big banquet on May 16. He extended a cordial invitation to attend the meetings. George Belcher told us of his recent business trip to the Pacific Coast for the United Shoe Machinery

Corporation. Harold Gurney mentioned that he expects to motor to California during the summer, and when he finds a place that suits him, he plans to buy and settle down. We should miss Harold's regular attendance at our bimonthlies and rather hope he will not find a location sufficiently interesting to prevent his coming back in the fall to good old Boston. We understand that Joe Wattles is planning a similar trip during the summer, but Joe intends to return, and we hope he will bring back some swell colored pictures. He was unable to be with us, as the Parent Teachers Association of Canton, Mass., and the Canton Rotary, of which Joe is president, had a joint meeting on the night of our dinner.

Matt Porosky, who is now located most of the time at Moline, Ill., missed the dinner, as he couldn't be in Boston until May 15.

Linc Mayo, our genial Treasurer, told us of the results to date on the collection of class dues — that 47 classmates had subscribed to a total of \$324.50. His eloquence resulted in additional cash payments, so that our class dues fund now stands at \$376.50, representing the subscriptions of 55 classmates. This shows improvement since our last report in the May Review, but it looks as if many classmates should get busy and mail a check to Linc Mayo in the near future. If we are to have a successful 40th reunion, we must have the support of the Class in providing funds by payment of class dues. Your Secretary has apparently been "asleep at the switch," as he only recently learned of the engagement some months ago of Linc Mayo to Dorothea Holland of Brookline, Mass. I feel that all the Class will join with me in best wishes.

Cookie, who was on a business trip through New York State, couldn't be with us, but has submitted the ensuing report on the condition of the Alumni Fund: "I am grateful to you, Nick, for an opportunity to put something about the Alumni Fund in the '08 notes. I wrote about all I had to say in my April 15 letter, particularly the analysis of what '08 did in the 1945-1946 Fund. But I can say right now that the response to the April 15 letter was more than gratifying. So far, 48 fellows have sent in \$985, which is far ahead of any previous year, and six men increased their contributions over last year. I should like to reach those '08 men who have never supported the Alumni Fund, because the old stand-bys come in anyway year after year. To those men who for many reasons have not contributed, may I say that I hope conditions will have changed so that they may join us. Although we should like a large amount at the end of the year, I feel that a large number of contributors is more important in showing the right spirit. Of course, you realize that this class agent job is no 'plush assignment.' One is either harping on contributions, or trying to get men to send checks in promptly, or trying to raise the average; but when a year winds up in a 'blaze of glory' as last year did, then you feel that your efforts are not all in vain. So here is a hearty 'thank-you' to all who have sent in checks thus far and a reminder to those who intend to send in but haven't 'gotten around to it' and a cordial invitation to any who haven't contributed before to join in putting '08 over as a better-than-average class."

When your Secretary was in Montreal early in May, he had the chance to visit a bit with Harry Chandler, who hopes to be able to get down to our 40th reunion. Harry told me that if I'd been a day earlier I could have attended the meeting of the Montreal Technology club. I tried to get in touch with Ferdy Friedman, but without success. He writes that he will try to be at the reunion, but is not sure of coming. Although Miles Sampson couldn't get to our May dinner, he planned to attend Alumni Day on June 8. Judging from comments, many of those at the dinner planned also to take in the Alumni Day lunch and banquet. We have tried, but without success, to reach Flaherty, since his return to this country after being released from a Japanese prison camp.

The following letters to Linc Mayo will be of interest. Why don't more of you drop us a line? It would be much appreciated by the Class. John T. Tobin writes from Tams, W.Va.: "I was very glad to get your letter of February 19. It bears the dickens how time flies by. I have been intending to answer it every night, and then some rush job would turn up, and there you are. As you can imagine, things are a little unsettled down here. During the shutdown, I tried desperately to get caught up and succeeded somewhat. You were all right if you were out in the field somewhere, but it was next to impossible to accomplish anything in the office, as everyone took this period to visit around. State mine inspectors would drop in and others from neighboring mines. The few odd jobs I had to lay on the dotted line I actually had to work on at night.

"Answering your query about snows — yes, we have them but rarely more than 12 inches, and they do not stay very long. We generally have very fine weather until January, and then through February and March have our winter. The trouble down here is the high hillsides. Here at Tams, the town is in a creek bottom about 600 feet wide with hills rising about 1,000 feet on each side. As they say down here, the sun hits you at eleven and leaves you about two o'clock in the wintertime. Our town is 1,700 feet above sea level. You get up early and it's not so cold, but at 8:00 A.M. the sun hitting over the top of the hills drives the bank of cold air down into the hollows, making that the coldest period of the day. But West Virginia as a whole has a really wonderful climate. It has its hot spells, but it is always cool at night and you can always sleep well. The scenery is rugged but beautiful. The Kanawha Valley, near Charleston, W.Va., the capital, is a great industrial center hence where most of our Tech men are. That is about 100 miles west of me here. One more word about the weather — in the wintertime you are glad to get inside the mines because it's warmer there than outside, and in the summer you are also glad, because it is cooler. It stays about 67 degrees F. in the mines, but in the winter you've got to keep moving or you will be chilled by the circulation of air from the ventilating fan.

"Life in a coal town is very interesting, as you are mixed up in practically everything that goes on. I lately finished putting on a minstrel show for the Parent Teachers Association. I and two others were sup-

posed to sing a song composed of about 20 verses concerning different ladies in town. I got up, got started wrong, had to stop and start all over again. I quote merely one verse, which came near costing me my place to eat: 'Of all the places in town to board/The worstest one I ever sawed Is run by a Lady with a big long tongue/If you can live on soup, stay with Mrs. Johnson.' I had a sorrowful trip out to Delphi, Ind., in April to the funeral of a friend with whom I had worked for about 25 years. I had never been out that way before; but it was a revelation to me, as I saw a wonderful farming section and met some very solid Americans. I was very sorry to hear about your left hip and hope this letter will find you much improved."

William C. Taylor writes from Corning, N.Y.: "Herewith a check to help replenish the class treasury. I've never considered my adventures sufficiently unique to provoke a letter for the Class, but since you ask for a report and as I have given none since graduation, I'll try to outline a few high spots for the benefit of any who are interested. Except for a year and a half in Puerto Rico, I have always worked in Corning for the Corning Glass Works and have been fortunate in having some part in all of the wonderful developments of that company over the past 35 years. This work resulted in my receiving the Potts Medal of the Franklin Institute in 1928 and one of the Modern Pioneer of Industry awards in 1940; also in my eventually becoming vice-president of the Corning Glass Works and director of glass technology. I was married in 1909 and have a son who is married and has two children and a daughter unmarried. In spite of the fact that my work has confined me chiefly to a small community, I have been fortunate in getting in considerable travel both for business and pleasure and have in the past 30 years visited more than 20 different foreign countries — several of them repeatedly — and have also covered the good old U.S.A. pretty thoroughly. In addition to the hobby of travel, I have spent much of my leisure time in sailing, my present boat being a 40-foot schooner which I use on Lake Ontario. My third hobby has been tennis, which I still play, although I abandoned tournament competition some years ago. I hope to be able to attend the 40th reunion and look forward to renewing acquaintances."

J. W. Maxwell writes from 2901 Copper Street, El Paso, Texas: "I am enclosing my check for class dues, and so on. I was in Boston a few days last fall putting a daughter in Radcliffe. But didn't have time for more than a good long visit with Professor Locke '96, who brought me more or less up to date on classmates. Since my last letter I've retired from active duty with the Mexican smelting department of American Smelting and Refining Company and am living in El Paso, where I hope any classmate coming through will look me up."

Ralph J. Batchelder writes from 513 South Los Robles Avenue, Pasadena, Calif.: "I enclose a small contribution for the class treasury. I am always interested in what the members of the Class are doing, as recorded in The Review and regret that I cannot be among those present. I am making plans to attend the 40th reunion,

so don't forget to send me the notices. Until last year, I had been in the art department of Metro Goldwyn Mayer for seven years and liked the work very much. After last year's strike I decided to return to the practice of architecture and expect to continue in it. I plan soon to go East on business, and if I get as far as Boston, will look you up. My best regards to you and all classmates. . . ."

A. C. Nichols pens us from Wilmington, N.C.: "It's been so long since I have sent you anything that I am somewhat ashamed of myself. In cleaning up my desk, however, I was again reminded of the notice you sent out on February 4 and decided it was perhaps time that I made a contribution. Since it is probably true that there are not very many of us left, I am certainly going to make the 40th reunion if I am still here at that time and able to go anywhere, even if not able to get to any between now and then. I had hoped to get up to the one this June on my way to Montreal for the meeting of the City Managers Association, but I have just accepted an offer at Daytona Beach to take over there on June 1, resigning from a similar position here in Wilmington. As to my family affairs, I have a son who was in the Marines and is now working in Tampa, Fla.; I have two daughters living with me, one married and one single, but my wife passed away about two years ago. I shall hope to learn something of the rest of the bunch if and when I can get together with them and only hope there will be some mutual recognition."

Walter E. Caldwell writes from 1808 Windsor Place, Louisville, Ky.: "I've just found this check folded in some other papers. I had thought it was mailed long ago in answer to your letter of February 4. These last few years have certainly been hectic — first, building up to a great increase in war production, then trying to keep going in the labor shortage. Now, it is trying to get back on a normal basis again. Labor relations have been a large factor in all this. These now seem to be well in hand if we can keep them there. Our greatest headache has been the interference in our local negotiations by national headquarters with an interest only in the national picture and no consideration whatever for us or for our men's wishes. Now, it's the matter of materials. One has to look ahead nearly a year in steel, and lumber is on a basis of grab anything you can find. With no vacations, I've fallen back on my hobby, photography, to keep on an even keel mentally. I've been fairly successful with it, and it has given me a lot of satisfaction. My daughter Virginia has married a Navy officer stationed in Corpus Christi, and my son Gordon is still in the Philippines. He will probably marry soon after he returns so we shall be in the fourth stage of married life. Here's hoping I can get up into your neighborhood before long. If so, it will be great to renew old friendships."

Walter Poor, President of Sylvania Electric since 1943, has become chairman of the board of directors. We should report the following change of address: William F. Grimes, United States Naval Shipyard, Design Section, Terminal Island, Calif. Wonderful summers and pleasant vacations

to you all. Tell us about them so we may have plenty of news to report to The Review next September. — H. LESTON CARTER, *Secretary*, 60 Batterymarch, Boston 10, Mass.

1909

From Paul: Jim Killian, Executive Vice-president of the Institute, graced the class luncheon that was held at the Technology Club in New York on Saturday, May 11. It must have been as far back as 1922 that we had a luncheon at the old Waldorf during a Tech Clubs Associated meeting and that was our first as far as your present Secretary was concerned. We have had some classic get-togethers in all these years, and certainly the current party is in that class. There were 15 in attendance. Delos Haynes, VI, happened to be in town from St. Louis. Molly Scharff, XI, VII, is back in town from his stay in Germany with General Clay and was with us. Mex Weill, II, came down from Port Jervis to join the festivities. Reg Jones, VI, was there with Reg, Jr.; and Carl Gram, X, came over from Lancaster County, Pa., and brought Carl, Jr., who is now located here in New York with the Mason Neilan Regulator Company. Carl, Jr., is to be married late in May to Anne Woodin Harvey. Carl is a recently discharged naval officer, and Anne's father is a colonel in the Army. If there is to be a joining of the Army and Navy services, the Harvey-Gram wedding looks to me to be right on the beam! And Carl, Jr., told me he had an apartment up in the East Eighties. That alone looks like the most favorable omen about the coming wedding! Congratulations, Anne and Carl!

Tom Desmond, I, wrote that he had a previous engagement attending the inauguration of Carter Davidson as president of Union College in Schenectady, where Tom is a life trustee and where, so I learned for the first time, he received in 1939 the honorary degree of doctor of humane letters! Dr. Desmond, may the Class send you rather tardy congratulations and best wishes! Alice Desmond has written a new book, entitled *Glamorous Dolly Madison*. I took the copy she was kind enough to send me to the luncheon for exhibition purposes. The *Times Book Review* section of May 12 made a favorable comment on the new book, which paints a most attractive picture of life in Virginia in the early days of the Republic. What a family these Desmonds are! (The Review Secretary and Muriel also received a copy, of which they are highly appreciative; they recommend it, particularly for summer reading.)

Bits of news came with the acknowledgments of the luncheon announcements. Lester King, IV, is setting up his own architect's office in Darien, Conn., after 16 years of commuting. And he is acquiring a new catboat where, obviously, he'll be spending the hours he used to require for commuting. All our best in the new venture, Let, and fair winds and sunny weather for the new boat! Charlie Shillaber, III, turned up in a routine notice from the Alumni Office, and I dropped in at the office of Ralph L. Evans Associates in the hope of seeing him. He is listed in the M.I.T. Register as a mining engineer, and the Evans business is in cosmetics, which just goes to show how versatile and adaptable the Class can be. It happened that I missed Charlie, but he

pleads, "Don't give up!" So we'll look for him at the next luncheon. George Southgate, VI, wrote from Pittsburgh that all was well with him and that they were having Dr. Compton with them at the active Technology club there at a late May meeting. Ed Howe, VI, has moved from Brooklyn and is now with Jackson and Moreland. Frank Loud, VI, and Joe Parker, I, are in the same office with him in Boston. John Mills, VI, has been spending quite a bit of his time in California and seems to be thriving on his retirement from the Bell Laboratories. I have a feeling that more and more books from John's pen will be gracing the bookshops. But the real feature of this luncheon was having Jim Killian with us to bring us up to date on things in Cambridge. Jim talked for more than a solid half hour without stopping to take a breath as he told of what was going on at the Institute. Yes, things are crowded, and the normal routine is being expanded till the seams are almost bursting. But everything in what Jim said made me feel that a magnificent job was being done. Jim did so well that I am beginning to ask myself whether he, after all, is not the best executive vice-president of any technical school in the country. We can all be proud of men like him and Dr. Compton, and of the Institute, which arouses in me from year to year more and more admiration and devotion!

Those of us who were lucky enough to take Course VI will always remember "Theoret," which was presented so clearly and inspiringly by Harry Clifford '86. The course may have been tough, but it did send numbers of Course VI men on to fame and many to fortune. On Easter Sunday, April 21, Harry reached his 80th year (see '86 notes) and was highly gratified to receive more than 70 messages and other tributes from former students and other friends. On the 29th of April at the Harvard Club in Boston, he was the guest of his several friends and former students, who met to pay their tribute. Your Review Secretary had the pleasure of being present and was privileged to read excerpts from the many messages that had been received. Five were received from '09 men, more than from any one class, and following are brief excerpts from four. Phil Chase: "Perhaps I have never really told you with how much pleasure and gratitude I look back on the associations I had with you at M.I.T. . . . under your crystal-clear exposition of the subject and your sympathetic handling of us boys . . . the difficulties were reduced from their mountainous proportions . . ." Robert E. Doane: "Tonight I am dropping all the insignia and the degrees which . . . follow your name, for tonight you are just 'Harry Clifford' to me, a valued friend of years ago. . . . I have thought of the students who have gone out from your classes for so many years and have carried with them some of your fine personality." Haylett O'Neill: "I can truly say that your clear analytical lectures were one of the great factors in teaching us how to think clearly. And I think that your sympathetic interests in the problems of the young fellows far from home meant quite as much to us." W. S. Rodman: "Well do I recall with what lucid exposition, of which you were a master, you presented to our small group of graduate students the theory of power

transmission. . . . Under your guidance I obtained inspiration for my further activities in fuller measure than from any other teacher." These are but a few of the well-deserved tributes to a great teacher and friend of students, who today is still active as an editor and consultant. His appearance belies the 80 years, and the Class wishes him many more happy birthdays.

The Class officers have recently been talking with representatives of the Co-operative Foundation Plan about a method of increasing the Class Fund, which now amounts to about \$30,000. Under the terms of the foundation contracts, gifts can be made to the Institute at a cost less than that charged under the Equitable policies that many of us carry. We shall celebrate our 40th anniversary of graduation in 1949. That will be a good time to increase formally the Class Fund. You will be hearing further from the class officers in ample time to join us in this very worthy cause. Horace Ford, by the way, speaks very favorably of the Co-operative Foundation.

In late April the Review Secretary visited his son Laurens, out of the Navy and now assistant comptroller with Munsingwear at Minneapolis. During the stopover at Chicago he called up George Wallis, II, President of the Creamery Package Manufacturing Company. George says that he and the company are busier than ever, even than during the war. As usual, he plans to come East this summer on "business" and to see his two daughters. He wishes to be remembered to the Class and hopes to see some of us when in the East.

In the *Pittsburgh Press* of March 12, at the top of a two-column news item, are a picture of Molly Scharff and a statement that he had been named a member of a three-man arbitration board representing the Duquesne Light Company for the adjustment of a wage dispute with the employees of the company. The item went on to describe Molly's distinguished career since leaving M.I.T., particularly that in the Army in World Wars I and II.

B. Edwin Hutchinson, III, addressed a dinner meeting held by the Detroit Bureau of Governmental Research on December 13, as part of the annual conference of the Governmental Research association, on the subject, "Citizen Responsibilities of the Individual." The bureau has prepared a copy of B. Edwin's remarks in the belief that their significance and impelling thoughtfulness deserve a wide audience. B. Edwin is chairman of the finance committee of the Chrysler Corporation.

Albert E. Thornley, II, has sent us an article entitled, "The Millionaire Cowboy Photographer" from the April number of *Vagabond*. The article runs as follows: "Probably no newcomer to Florida has made more friends, in high and low places, in shorter time than Charlie Belden [II]. His friends joshingly call him 'the millionaire cowboy photographer,' much to his annoyance. They do this because he always wears cowboy clothes of the finest quality and is wholly independent of photography, to which he devotes all his time, for a livelihood. Charles Belden is a graduate of M.I.T. and spent the greater part of his life on a ranch in Wyoming. He knows most of the West intimately. His one boast is that he has carried a camera more miles on horseback than any living man, probably

60,000 miles. Then, just to prove that he also has modern ideas, he has flown with his camera many uncounted miles. He says he has spent about 2,000 hours in the air. The Beldens live in two modern houses on Redington Beach, near St. Petersburg. One house is a combination guest house and photographic studio. Belden photographs, in colors and black and white, appear in national publications. He lectures and shows movies and stills. Usually people exclaim, "Those are without question the finest pictures we ever saw." His Western animal pictures are masterpieces. Instead of twiddling his thumbs as a retired man, Charlie is one of the busiest workers in the state. One day he may be with the Governor and other nabobs and a few days after with trappers and hunters in the Everglades swamps. The Florida Power Corporation engaged him to take hundreds of photographs of its system, and private individuals have asked him to make color pictures of their gardens. He uses the same care on the picture of a substation that he uses on a rare flower. After traveling over the world, free to live where he pleases, Mr. and Mrs. Belden succumbed to Florida's weather and to the opportunities offered by what may turn out to be the fastest growing state in the Union. Both of them radiate happiness. It is plain that they enjoy living. If there are dull moments in their lives, no outsider is aware of it. To find beauty and to photograph it is a Belden passion." Albert asks, "Is this the Charlie of Tech Show fame?" It surely is the same Charlie. Our last address for him is Z/T Ranch, Pitchfork, Park County, Wyo.

Word has been received of the sudden death, on April 28, of George Sabin Brush, II, at his home in Essex Junction, Vt. He had held many important positions with the Boston Elevated Railway and railroads in Portland, Maine, Springfield, Mass., and Houston, Texas. His last position, held many years, was as manager of the Boston division of the asphalt department of the Shell Oil Company, from which he retired in June, 1944. — PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 3860 Rodman Street, Northwest, Washington 16, D.C.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

1910

Only recently did I receive notice of the death of Curtis Webb, who passed away on last August 2.

In the returns from our 35th reunion, a few classmates wrote some interesting notes regarding their activities. Dick Fernandez is president of the Everett, Mass., Rotary Club and is to be their delegate at the Atlantic City convention of the Rotary International to be held during the week of June 2. Maurice P. Anderson had a very pleasant visit with E. J. W. Ragsdale in Seattle a few weeks before the latter's death on February 24.

The following letter was received from Harold Wilbur: "The backlash of the construction and maintenance work that built up in the electric utilities during the war plus the present difficulties caused by numerous strikes are keeping us extremely busy at this time. During the war I func-

tioned as regional co-ordinator for the Third Service Command for the posts in our area, which included the large Indian-town Gap Military Reservation, the Reading Army Air Field, and the Middletown Air Depot, one of the largest Air Forces maintenance plants in the country. Lately I have received, along with other co-ordinators, a certificate from the War Department expressing its appreciation of the services performed. My daughter is a junior grade lieutenant in the WAVES and now expects to come out of service about August 1, after an extension beyond her original release date of March 1."

Raynor Allen wrote that he would be unable to attend the reunion as his firm has begun to build a new plant and he "has to keep on it." Kenneth Armstrong will be unable to attend the reunion as his son is being married on June 8. Bob Breyer will not be able to attend the reunion but expects to be in Boston later this summer. Walt Spalding writes that he is flying from Honolulu and expects to be in Boston on June 2 but business is such that he will be unable to stay for the reunion.

The Boston *Herald* published a picture of John M. Bierer with the following caption: "John M. Bierer of Waban, who was presented with the Silver Buffalo by the National Council of Boy Scouts of America for 'distinguished service to boyhood,' . . . at the annual meeting of Boy Scouts at St. Louis, Mo." — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston 8, Mass.

1911

With deep regret we learned of the death of Rudolph Emmel, III, of Glen Ridge, N.J., at the New York Hospital on April 18 after a brief illness. He had planned to attend the reunion this year with Mrs. Emmel, who survives him. He also left a daughter, Elsie. Rudolph had been for many years with the South American Development Company, Inc., which has offices at 75 West Street, New York City, and for several years preceding his death had been secretary and a director of the organization. The concern operates gold and copper mines in South America and British Columbia, and as a mining engineer Rudolph had traveled extensively in those countries and also in Africa. He was a member of the American Institute of Mining and Metallurgical Engineers. With his passing we lose a loyal, enthusiastic classmate, and our sympathy goes to his widow and daughter, who live in Glen Ridge.

Word was also received from a piece of mail returned, that Gordon W. Elder, V, of Trenton, N.J., had died on December 14, 1944. No further details have been available, and we know he had been associated for a number of years with Sanhicar Rubber Company there in Trenton. He was with us but two years and never had taken an active part in class affairs.

These notes are being typed exactly a week ahead of our 35-year reunion, when advance registration indicates an attendance of 50 couples and nine stags, so that our attendance figure of 117 attained in 1941 seems almost certain to be eclipsed this year.

George Kenney, I, in addition to his Regular Army duties, is also United States

Army Air Forces representative on the United Nations military staff committee. What a story he'll have for us at the reunion! Did you hear George on "Information Please" from N.B.C. stations on Monday, May 29? He and Reynolds joined Adams and Kieran to form the board, and George really did well until his kid brother, Arthur J. Kenney of Floral Park, Long Island, sent in three geographical questions, two of which stumped the experts, including the General, thereby winning the younger Kenney a set of the "Encyclopaedia Britannica." George said his brother had sworn he'd "get" him some day.

Once again 1911 has started off with a bang in the Seventh Alumni Fund, which got under way on April 1. Our April total, as a class, was \$1,179, exactly one dollar behind our April, 1945, total. Let's keep up our fine work!

A nice letter has come from Henry C. Davis, VI, a colonel, now with the Peiping Headquarters Group in Peiping, China. He says his current location is a slight barrier to his coming to the reunion, much as he would like to. "My shift out here," he writes, "was on six days' notice at the end of March. I was harbor defense commander at Fort MacArthur, California, in the Los Angeles area and was warned to be ready to go to China by air lift in about six days. Ten of us flew from Hamilton Field, San Francisco, to Honolulu, Johnston Island, Kwajalein, Guam, Iwo Jima, Tokyo, Shanghai, and Peiping. The total flying time was 45 hours, but we were held up at Kwajalein for two and one-half days and at Guam for 36 hours on account of a typhoon. Five stray Japs were captured on Guam while we were there. Some of them are still in the bushes at the north end of the island.

For the present, I am here in Peiping with about 100 others as a result of General Marshall's trip, to try to straighten out this mess between the Communists and Nationalists. The work is most interesting, if difficult, and the Manchurian situation makes the outcome very uncertain. All hopes are pinned on General Marshall, who has recently returned. Peiping is real China, with beautiful temples and palaces, very little damaged by the Japanese. They certainly planned to stay here for they built quite extensively and took relatively little away with them — a statement which does not apply everywhere but does here. I don't believe I ever told you that I was remarried a little more than a year ago to Mrs. Laura G. McDowell from Riverside, Calif., and am hoping she will be able to join me here in the near future." In addition to a check for class dues, Doc sent me a Chinese \$100-bill, worth five cents at 2,000 to one, the present rate of exchange. It was awfully nice to hear from you, Doc, and fine to learn of your remarriage.

Among those who had definitely hoped to be able to attend the reunion is Bert Fryer, VI, who wrote from his Carnation, Wash., headquarters to cross him "off the list of even the possibles." Bert is a lumber drying engineer, handling design, construction, and operation. "Too much farm," he explained, "and too many jobs, to say nothing of having to see that the doctors are provided with the proper stand-

ard of living again. I wish I could make it, but my traveling will have to be confined to the West Coast for this year, as these jobs are on the long circuit of about 2,200 miles. I hope you will all have a swell time." We'll surely miss you, Bert.

Bog Stevens, IV, also will be unable to attend, but he wrote a nice letter recently, informing me that he and his wife had bought a two-family house at 27 Skahan Road, Belmont 78, Mass. "Our 22-months-old David," he writes, "had the chicken pox while our six-year-old Edward was down with the measles — all this sickness at the time we were moving. At Stone and Webster, here in Boston, the design division is out on strike. We joined the American Federation of Labor two years ago, and I believe this is the first strike of its kind in New England, among the white-collar workers. The principle we are fighting for is not the mere increase in pay of 20 per cent but for the minimum base rate. I am doing my share of picket duty and am proud of it."

Fred Daniels, VI, President of the board of trustees of Worcester Academy, Worcester, Mass., is scheduled to present diplomas at the school's commencement on June 3. — Ban Hill, I, retired Baltimore street railway magnate, writes that he can't make the reunion, but he does plan to come to Boston for Alumni Day on June 8. It will be great to see him!

Bill Cunningham, columnist, paid quite a tribute to our Carl S. Ell, XI, President of Northeastern University, when he singled out Carl's million-dollar Student Center building fund as one worthy of the attention of "all people of means, large or small, who can and who will invest something in the future of the United States of America." Carl and his wife were all set for the reunion until lately, when he wrote that on account of illness among his executive staff and the nearness of commencement week they would have to forego the pleasure of attending. We shall also miss Frank Stibbs, XI, and his wife, who found in early May that they would have to cancel their plans to attend. He is in the research and development division of the Hartford Empire Company, Hartford, Conn.

Also from Hartford we learn with regret that Milt and Gertrude Hayman will be unable to be with us. For over three and one-half years Milt, normally an architect, was building maintenance engineer at Pratt and Whitney Aircraft Company, leaving there early last fall to return to private practice, with his office and drafting room at his home (38 Roberts Lane, West Hartford). Recently Pratt and Whitney called him back, and because of the uncertainties of materials and labor, plus all the government restrictions, it seemed wise to accept. Hence he is now having a 50-hour week at Aircraft and has some few commissions under way and thus can't take the time to attend the reunion. In a postscript, Gertrude added: "Perhaps it's a bit premature, but we'll try to join you in 1951! Our Bob, released from the Army in January, is with D. C. Thorpe (glass) in Glendale, Calif. Nancy is teaching at the Brookline Hills Nursery School, Brookline, Mass."

I. W. Wilson, XIV, had hoped right up to the last minute that some developments would permit his attendance, but he finally

wrote on May 20 that he must "very regretfully admit that this is going to be impossible — a very real disappointment, for I still cherish the memories of our 25-year reunion. I have lately returned from a vacation in Sea Island, Georgia, which was doubly enjoyed because of the very few opportunities during the last six or seven years for any vacation whatsoever. My second daughter is being graduated from Wells College, and naturally I want to be with her at that time. This combination, together with plenty of excuse to occupy myself in the office, makes it necessary for me to admit that I am thoroughly 'licked' as to the reunion. My best to all!"

Similarly Bob Haslam, X, finds he just can't possibly make it this year, what with a business trip to Texas for a week beginning on May 24 and the annual meeting of the Standard Oil Company of New Jersey on June 4. By the way, Bob spoke before the Boston Rotary Club at its May 22d luncheon on "America's Real Resource" and according to Emmons Whitcomb, a coursemate of Bob's, "gave a good talk and kept the group right at attention — most unusual for Boston Rotary Club." Bob hasn't forgotten the ladies, though — as the reunion will demonstrate.

Remember Sam Blum, VI, who was with us only in our freshman year? Well, he's still one of the waltz kings in Boston, for every Monday night Sam Blum and his Old-Timers play for dancing at the Uptown Ball Room, near Symphony Hall, being billed as "waltz specialists par excellence." — We are sorry to learn from Don Stevens, II, that the R. H. Rangers' home was quite badly damaged by fire in early May. Dick, a major in the Signal Corps, is still in the European theater and had hoped to be back by reunion time.

Believe it or not, 110 was the exact registration we reached at our Memorial Day week-end, 35-year reunion at East Bay Lodge, Osterville, Mass. The weatherman, who had always been so kind to us in the past, treated us to some of his late spring vagaries this year, when early on Saturday morning June came busting out all over with a bitterly cold northeast wind, which brought rain with it early Saturday evening, continuing all night and Sunday. However, you'd never have known inside that the weather was foul, for, at the risk of being trite, I can truthfully say that folks agreed this was the best yet! We defy any reunion or convention to line up a trio of speakers to equal Dr. Compton and our two illustrious classmates, George C. Kenney and Luis de Florez. Complete details will be available later in the final current issue of *The Eversetter*, with Jim Duffy, VI, and Carl Richmond, I, as keepers-of-the-log and including the usual rotogravure section, but we do want to give you at this time a few details and the list of those present. You really had to be there to sense the success of the affair, and the one regret that all present shared was that our Class President, Don Stevens, II, who had registered to attend with his wife, Lois, was forced to give up the trip as his doctor has ordered a month's complete rest for him, because of nervous exhaustion. Drop him a line at 141 Woodland Avenue, Ridgwood, N.J.

At the class banquet on Saturday evening, at which your Secretary presided, in

Don's absence, we had three speakers with the usual "talkaround," preceding the main talks. During said talk, Marshall Comstock, VI, general reunion chairman, after telling his own vital statistics, said he wished a moment or two longer and as a tribute to your Secretary and his fine wife he presented "the guy you write to" with a very substantial check and his better half with a stunning corsage. (Note: For Sara and for myself I wish to express feebly and inadequately to you all our very sincere appreciation, and thanks a million! — O.B.D.)

Admiral de Florez spoke first and in a sparkingly characteristic style told us much of what the Navy had done in the field of training for fliers, including plans for the future. He interspersed his talk with some of his inimitably told French Canuch stories, which had us in stitches. Frank Osborn, III, who had flown up from Chile to earn the long-distance distinction this year, gave a brief but significant talk on the wonderful opportunity the United States has in dealing with the peoples of the South American countries. General Kenney, at the very beginning of his forthright talk, assured us that it was the "kids," in that 18-to-27 age group, who won this war, and later, in a discussion period, De Florez wholeheartedly agreed with him. George followed with some marvelous tales of exploits by his kids; he described his thrilling entry into Tokyo with General MacArthur, and the dramatic signing ceremony on the U.S.S. *Missouri*; and then, as preliminary to a report on his current and recent work as senior United States member of the United Nations Military Committee, he exhorted us all to read the charter of the United Nations.

Dr. and Mrs. Compton spent the day with us on Sunday, driving down from Cambridge in a pouring storm, and after dinner Dr. Compton gave us a tiptop talk in the spacious living room of the Lodge, first recounting some of the fine accomplishments of Kenney and De Florez, whom he characterized as "two of the outstanding figures in the country today." He held us spellbound with a very complete and vivid description of the plans for the impending Bikini atomic bomb tests and the reasons behind all the observations which are to be made.

Here is our registration list: Dr. and Mrs. Karl T. Compton; Ralph G. Adams and daughter, Muriel; Royal and Jessie Barton; Eldred and Madeline Besse; Phil and Bobby Caldwell; Jim and Toni Campbell; Obie and Alma Clark; Marshall and Helen Comstock; George Cumings; Paul and Otilie Cushman, their friends, Mr. and Mrs. Frank Reid, and Paul's cousin, Mrs. Arthur Cushman; Monk De Florez; Dennie and Sara Denison; Minot Dennett; Jim and Mildred Duffy; Leroy and Marj Fitzherbert; George and Renée Forristall; Don and Jess Frazier; Joe and Yolanda French; Joe Gersherberg; Gordon and Gertrude Glazier; Louis and Carrie Golden; Dick and Anna Gould and their youngest son, Prescott; Tom and Mildred Haines; Stan and Jule Hartshorn; John and Mabel Herlihy; Bill and Barbara Hodgman; Paul and Elizabeth Kellogg; George and Alice Kenney; Art and Mary Leary; Charlie and Marion Linehan and their daughter, Marion; Maurice and Sarah Lowenberg; Morell

and Marion Mackenzie; Charlie and Elinor McManus; Roy and Ina MacPherson; Otto and Helene Meisel and their son, Bob; Bob and Margaret Morse; Frank Osborn; Chet and Mildred Pepper and their son-in-law and daughter, Windsor and Emilie Carpenter; Carl and Helen Richmond; Harold and Frances Robinson; Ralph Runels; John and Bertha Scoville; Nat and Louise Seeley; Sellie and Dai Seligman; Warren and Marjory Simonds; O. W. and Gertrude Stewart; Ed and Geneva Stimpson; Harry and Grace Tisdale; Ted and Helen van Tassel and their son-in-law and daughter, Russell and Nancy Harmon (Note: Russ was one of General Kenney's fliers — a lieutenant — and as a result of a talk with the General is planning to re-enlist); Walter and Grace Welch; Gordon and Eloise Wilkes; Al and Anita Wilson; Emmons Whitcomb and Erving Young.

This year's committee comprised the Ten Veterans, who have attended all our five-year reunions to date: Marshall Comstock, chairman, and his wife, Helen; Harry and Grace Tisdale; Clark, Cumings, Denison, Herlihy, Stewart, and Whitcomb. Again, hearty thanks for your magnificent expression of appreciation for your secretary's work (which is really a pleasant part of his life) and don't miss the 40-year reunion five years hence! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1914

The class notes this month must regretfully open with notices of the deaths of three of our classmates, Duffield, Broga, and Hugh Campbell.

These notes in recent months have told of the illness of our senior Class Day second marshal, Thomas Jefferson Duffield. Tom had been ill for some time and since last October had been confined to his bed as the result of a cerebral hemorrhage. He was at first in a New York hospital and then, showing some improvement, went to Asbury Park, N.J., but more recently was moved back to a New York City hospital, where he died on May 15. Services were from the Protestant Episcopal Church of the Ascension on Fifth Avenue, on Friday, May 17. His wife and son survive him. Tom was one of the most active members of our Class during undergraduate days, holding various class officerships, including that of class treasurer. He took part in many athletic activities and was always to be counted on as an active member of special committees working on matters for the Class and the Institute. His first professional position was that of public health officer for Summit, N.J.; he then served as a major in the Army Sanitary Corps during World War I. After the war he joined the Rockefeller Commission against Tuberculosis in France as chief statistician. From that position he went to the League of Nations as an epidemiologist. In 1926, Tom returned to the United States to serve as executive secretary of the New York state commission on ventilation. Three years later he became statistician for the Metropolitan Life Insurance Company in New York. In 1935, as the result of being at the head of a Civil Service list, he was appointed registrar of vital records in the

New York City department of health, which position he held until his death. As a regular attendant of class reunions and the special dinners held in New York, Tom always lent color to those events. His warm friendship and his genial spirit will be missed by all his classmates.

Although both of their deaths occurred during last January, word of Broga and Hugh Campbell did not reach your Secretary until May. Wilson Culver Broga died on January 15; and Hugh Morton Campbell, on January 24. Both of these men affiliated with 1914, but they also shared their affiliation with other classes — Campbell with 1913. He was a loyal member of 1914, however, and when able to come East for Technology events, associated with us. After leaving the Institute, he joined the United States Public Health Service at Cincinnati. He later entered the employ of the Ault and Wiborg Company of Cincinnati as chemical supervisor of their dye department and for the past 25 years was associated with the Cincinnati Chemical Company. Hugh was one of the few classmates who was married when he came to the Institute. His wife, the former Lola Neff, two sons, and two daughters survive him.

Broga came to the Institute from Westfield, Mass., entering with us in our freshman year, but because of ill health he had to stay out for some time and finally, on returning to the Institute, affiliated more with the Class of 1916 than with our own, although he always took a keen interest in 1914 affairs. Broga spent all the years after leaving the Institute in western Massachusetts, being associated with companies in the Worcester, Greenfield, and Springfield areas.

Your Secretary was one of the guests at the George Westinghouse Centennial Forum held in Pittsburgh in mid-May. Although not one of the program speakers, Alden Waitt, in his capacity of major general and head of the Chemical Warfare Service, was one of the special guests. This permitted Alden and your Secretary to visit with each other; thus the latter learned that Alden had appeared on many speaking programs, including one on science with Watson Davis over the Columbia network. Alden has presented several awards to distinguished American chemists, including the president of the Standard Oil Development Company. One of the items on the program dealt with the bacteriological work of the Chemical Warfare Service, particularly in finding a vaccine for rinderpest, a disease which it was feared the Japanese might be attempting to spread in American cattle. As presented on the program, the work done in this branch of bacteriology was fearful indeed to consider, and we may well be proud of the preparation that the Chemical Warfare Service under Alden's direction accomplished for us during the war. Your Secretary had hoped while in Pittsburgh to have the opportunity for a chat with our classmate, Levi Bird Duff. But the program was so full that no spare time was available; moreover, the threatened railroad strike made it undesirable to take any chances on staying longer in Pittsburgh than required for the program. He did find time to telephone Duff and Mrs. Duff. The Pittsburgh papers were carrying announce-

ments of Duff's promotion to the position of director of the Allegheny County works department. For the past 10 years he had been chief engineer of the department. This position covers the supervision of the erection and maintenance of bridges, highways, and similar works in that region. Duff's three sons had been in the service, his oldest boy having served five years in the Field Artillery with the final rank of captain. His experience covered service through Africa and Europe under General Patton. His second son, recently discharged, was a technical sergeant on a B-17 bomber. A third son, who was graduated a year ago from the Navy V-12 course at the Institute, is now an ensign in the Corps of Engineers, currently stationed at Seattle.

You can always count on George Whitwell to be in the midst of some public service activity. He has now been nominated as a director of the Chamber of Commerce of the United States. In his own city of Philadelphia he is chairman of the municipal affairs committee of the Chamber of Commerce and Board of Trade after having been president of the Chamber of Commerce. His service on the United States Chamber of Commerce has included membership on the Advisory Committee of National Affairs.

Chet Ober made the New York papers when the mayor of New Rochelle presented Chet's wife with a pair of nylons. It seems that Chet and Mrs. Ober were stopping in New Rochelle to do some shopping, and on stepping out of the car, Mrs. Ober stepped into a large hole in the street, bruising herself somewhat and tearing her nylons. The Mayor thought that the town should treat its visitors better than that; so he proceeded to procure a new pair of nylons to present to Mrs. Ober. The other women of New Rochelle are quoted as saying that chivalry, like charity, should begin at home.

Your Secretary receives many letters from 1914 men on the situation at the Institute as to the entrance and transfer of students. Unfortunately, the situation at Technology is worse than it is in many other colleges. A 50 per cent expansion is all that can be handled because of the limitations imposed not only by instructors but by the physical requirements of laboratories and housing. Your Secretary is always very glad to assist in any way possible and to look up any facts that may help. There is very little, however, that he can do other than to see that the proper persons at the Institute are approached by the students or their fathers.

George Perley's only daughter, Pauline Richmond Perley, was married on June 1 in St. Stephen's Episcopal Church at Port Washington, N.Y., to Norman Lunny Maguire. The couple will make their home in Hartford, Conn., where Mr. Maguire is an engineer with United Aircraft. — H. B. RICHMOND, *Secretary*, General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York 19, N.Y.

1915

As these notes are being written, the success of our Victory Reunion is definitely assured, and we're all looking for-

ward to a gay meeting of old friends. The story of the reunion will be in the November class notes, available to all who contribute to the Alumni Fund. Send your check and put 1915 over the top again on all quotas. Our thanks and appreciation go to the 1915 coeds who always loyally and generously pay their class dues and support the Alumni Fund—a fine example for some of the 1915 men who don't do quite so much.

In the column "Letters to the Editor," the May 6th number of *Life* carried a letter from Deoch Fulton calling attention to credit due the New York Public Library (where he carries on) for some material recently used by *Life*. A gracious acknowledgement from the editor repaid Deoch. — From a spring holiday at Hot Springs, Va., Ken and Ester Johnson announce they are grandparents with the birth of a baby girl to young Ken and Jean Johnson. — With a generous dues check, Phil Small adds that he hopes to be at the reunion.

Bill Mellema, 1663 Beverly Boulevard, Los Angeles 26, Calif., sent this message: "Sorry, but I am so busy and unable to get qualified men that I cannot come to the reunion this year. Good luck to you and my greetings to the members of the Class of 1915. . . . Elwin P. Norberg was quite ill a while ago but fortunately has recovered." Ken Kahn, 2269 Canyon Drive, Hollywood, Calif., writes: "Sorry we shan't be at the reunion. . . . Did you know that the Technology Club of Southern California is publishing a directory? The committee consists of George Cunningham '27, F. W. Sammis '28, I. E. Hattis '34, R. L. Alder '37, D. D. Weir '38, H. E. Beebe '10, and K. D. Kahn '15." — Any 1915 men visiting the West Coast or already there should look up Ed Steere, whose address is Corinthian Island, Belvedere, Calif. He says: "My more or less permanent address is now on this sightly island attached to the Tiburon Peninsula by a causeway. . . . By the way, are there any luncheon clubs or organizations in or around San Francisco, Oakland, or Berkeley? Now that my transportation duties are terminated and the shooting is over, I'd like to get in touch with any Tech men hereabouts. . . . I still have my ranch down South. At present it's leased out."

A fine letter has come from Joe Livermore, and it will be interesting to see him and hear his story at the reunion: "After four years in the munitions division of the company, I returned last June to the Passaic plant of the United States Rubber Company to resume my work as plant engineer. . . . At Des Moines in 1941-1942, I had charge of the construction of the Des Moines Ordnance Plant for the production of .30 and .50 caliber small arms ammunition. In April, 1942, I acted as consulting engineer in the construction and equipment of the Scioto Ordnance Plant at Marion, Ohio. In June, 1943, I was made factory manager and operated the plant until it was closed down in January, 1944. That was a rather unique experience — to construct, operate, and close down a large plant within two years' time. My third assignment was at the Charlotte, N.C., plant built by the company to assemble and load 40-millimeter ammunition for the Bofors anti-aircraft guns for the Navy. This plant, too,

was closed down after V-J Day. . . . The rubber business is booming. Our reconversions are mostly completed, and when labor settles down for the long pull with the wage problem licked, things ought to be interesting. . . . My son Dick (M.I.T. '44) has come in on the *Howard Victory* from Europe and three and one-half years of service. He is now at Camp Dix in New Jersey awaiting final release. He was a first lieutenant in the Antiaircraft battalions of the Ninth Army. . . . My daughter, June, is a senior at the Ridge-wood high school. . . . For some reason, I run across very few M.I.T. men and haven't seen a member of 1915 for a coon's age. Count me in on the reunion this summer, Azel, and greetings to your good self and any you may see. . . . I did see Bill Smith, now Admiral Smith of the Bureau of Yards and Docks of the Navy. He addressed a recent meeting of the American Society of Civil Engineers in New York, and I had a good visit with him." Joe's address is 528 Wyndemere Avenue, Ridgewood, N.J.

Another loyal and interested wife writes to me for her husband, but we are sorry to know from Mrs. Perin's splendid letter the tough time Don has had. We all admire his courage and hope he does make the reunion to balance the middle of the class photo with his tug-of-war rotundity and 1915 banner. Don's present address is in care of Erving Paper Mills, Erving, Mass. Here is Mrs. Perin's letter: "For the last three years things have been pretty tough, as far as health goes, for my husband, Don Perin. That is why you have not heard from him. After fooling around with several local doctors and being sent to the Hartford Hospital several times, where he was placed on the critical list, while I was told he could not possibly live, we gave that up and I took care of him at our East Hartford home. Don had to resign from United Aircraft; we sold our house and went to Greenfield to spend some time with my family. Then, as he felt a bit better, we went to Brookline, N.H., where his mother lives. He got steadily worse and lost the use of his left arm and left leg. He telephoned his fraternity brother, Babe Hall '14 who has a son-in-law on the staff of the Mary Hitchcock Memorial at Hanover, and Don got in there right away. After much treatment and thorough examination, they located his trouble, and by means of an operation and a new treatment, Don has made a miraculous recovery. Last September, when he returned to the hospital for a checkup, they gave him much encouragement and discovered that some of the bones were actually growing back. He was not yet able to work, however, and still has to take things easy; but you know Don, he just *overdoes*, each time he gets better."

"Last January 8 he had an offer from the Erving Paper Mill at Erving, Mass., to redesign some machinery and invent new machinery. He is doing that now. Because commuting from Greenfield was too much for him, we now live in the guesthouse at the mill for a while. He was feeling very well and was just about to sign the card saying he would be at the Victory Reunion, when he had a return of illness — all from his overdoing — and is walking with a cane now but working every day. He tells me that he wants so much to attend the

Victory Reunion but doesn't feel it is wise. Every time he gets tired he has a set-back; so this time he has promised to take care of himself. He will be with you all at the reunion in spirit, anyway, by thinking of the Class at that time.

"It may interest you to know that there are two other Tech men here. Pierre Drewsen '12, and John Janson '18. The former is a chemical engineer and member of the well-known paper makers and is general superintendent of the mill. . . . Since our marriage, Don has turned over all his correspondence to me, hence, my letter to you. I think, however, I can persuade him to add a little note on the end of this letter. . . . We both had such a grand time at the last big reunion we went to. Don still has his sweater, though the moths have eaten most of the letters and the elbows; and he prizes it despite its bedraggled appearance. This brings our sincere good wishes for a wonderful Victory Reunion." And here is the postscript from Don: "In spite of all Don has written, I have not entirely given up hope of getting to the reunion. I couldn't make such a long trip in my present state of health, but if I keep on improving, I may be strong enough when the time comes. Keep me posted, anyway."

Classmates in Boston or vicinity this summer be sure to look up your Secretary, whose office is at 581 Boylston Street, Boston 16, telephone KENmore 7887; his home telephone, LONGwood 3438. Now, despite a troubled year of problems, worries, hardships, and uncertainties for us all, we close this column with anticipation of our coming Victory Reunion; a warm sense of the fine close friendships in our Class; and a look ahead to a bright, happy, and successful future for all classmates and their families. — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

1916

These notes will appear approximately one month after we have held our 30th reunion. It seems appropriate to record, however, that more than 60 acceptances are in hand at the writing of these notes on May 22, with the expectancy that 80 or more classmates will attend the get-together at East Bay Lodge, Osterville, Cape Cod, Mass.

During April, Dave Patten, Commander, U.S.N.R., received the Army Legion of Merit award for "exceptionally meritorious conduct in the performance of outstanding services during the period from March 21, 1944, to August 9, 1945."

Last March, Harry A. Lavine of 103 Wil-
mington Avenue, Dorchester, was elected a trustee of the Boston Evening Clinic and Hospital at 452 Beacon Street, Boston. Harry was formerly a supervisor of the Du Pont Company's Buffalo branch and an inventor of one of the Du Pont dyes. Currently, he is manager of the Equitable Life Insurance Company at 82 Devonshire Street, Boston.

Joseph W. Barker, dean of the school of engineering at Columbia University since 1930, has resigned to become president of the Research Corporation, an educational and scientific foundation with offices at 405 Lexington Avenue, New York City. This should be a more convenient location for visiting classmates to call on Joe than was his Morningside address.

Our Class Agent, William W. Drummey, 80 Boylston Street, Boston 15, reminds me that the appeal for the Alumni Fund is in progress. Last year 151 classmates contributed to a class total of \$2,300. Our quota this year is \$3,650. If you have not already sent in your check, make it payable to the M.I.T. Alumni Fund and mail it to Bill Drummey at the above address.

Classmates wondering about Charles Lawrance will be interested to know that he is now superintendent of schools for Kingston, Pembroke, Plympton, and Halifax, Mass., with his office located in Pembroke, Mass., which is also his mailing address. — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Berke-Moore Company, Inc., 11 Boylston Street, Brookline 46, Mass.

1917

The big news this month is the award of the Distinguished Service Medal to two of our members. Major General Albert F. Hegenberger received the award from General Carl Spaatz, Commanding General of the Army Air Forces, and it was given "for performing exceptionally meritorious services as commanding general of the Tenth Air Force from July to November, 1945. Without time for prior plans or organization, he was committed to the speedy evacuation of Allied prisoners of war and the ferrying of Chinese troops in reoccupation missions of the Chinese Government in addition to shifting great quantities of American equipment and personnel throughout China. His initiative and exceptional ability, as shown in directing these widely varied aerial operations, were a marked contribution to the mission of the United States Army Air Forces in China." In addition to the Distinguished Service Medal, General Hegenberger wears the Distinguished Flying Cross with Oak Leaf Cluster, the Mackay Trophy Medal, the Order of the Crown of Italy and the Order Cloud Banner (China). The general and Mrs. Hegenberger are now living at Arlington, Va., and he is on duty in the Officer Selection Branch, Headquarters, Army Air Forces. You will not be surprised to hear that the other recipient of the Distinguished Service Medal is Commodore William A. Sullivan, who can now add this to his many other honors.

J. Worthen Proctor, an Army colonel, is now stationed at Aberdeen Proving Ground, Maryland, at the Aberdeen Ordnance Depot, and has recently been concerned with the long-term storage experimental program. He sent in some interesting photographs of the manner in which artillery is housed in large gasoline storage tanks. — Bob Marlow is still at the Fort Dix Army Air Base, Fort Dix, New Jersey, with the Air Transport Command, where things are becoming somewhat less active.

Howard R. Stewart of Worcester has been ill but writes that he is now able to get about a bit again even though he must be careful not to be too active, for a time at least. He is still with the Economic Machinery Company there. — Robert C. Erb has been made president of the J. F. McElwain Company. This is one of the largest shoe operators in the country, producing the Thom McAn shoe, and the position carries as much responsibility as any in the

whole industry. Bob has long been known as an outstanding authority and leader in shoe manufacture and has maintained a place that would be hard to match even within the close competition of the shoe game.

The New England Council held a Research Day Conference at the Hotel Statler in Boston on May 16 with a large group of research leaders from universities and industry in attendance. The chairman who presided most ably was Kenneth E. Bell, Vice-president of the A. C. Lawrence Leather Company. Other scientists in attendance included Ray Blanchard, general manager of the Hood Rubber Company, Robert C. Erb, and John Langdon Parsons of Hollingsworth and Whitney of Waterville, Maine.

The responses to suggestions for increases in gifts to the Alumni Fund in connection with the approach to our 30th anniversary next year have been encouraging. A number of members of the Class have made increases in the annual amounts formerly given. No informal reunion was planned for 1946, but preliminary arrangements are already being made for 1947, and it is anticipated that we shall then have a large attendance and a grand postwar get-together. It is hoped that many members of the Class who have held high military office will by then find the time to relax with us a bit. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

1918

Those who are likely to be aprowl along Massachusetts Avenue between Technology and the Necco factory will often see Ted Norton with his deliberate, self-effacing stride going from one place to the other. If you shadow him, he will be found to disappear into a restricted area on the second floor in the rear of the Necco building. Even as late as 10:00 P.M. eerie shafts of light come out under the door marked "Positively No Admittance," and conspiratorial voices murmur behind the petition. The rumor floating on the wind of Necco gossip is that Ted is supervising some sort of bomb research. Connected with a ceramics expert, this report carries the implication of warfare on a simple domestic level where old crockery is hurled from belligerent to belligerent in an entirely personal sort of way instead of the utter impartiality of atomic fusion set in motion thousands of feet beyond any possibility of seeing one's victims. But Ted just walks with self-effacing stride and admits nothing.

Clarence S. Timanus is reported to have died on March 12. We regret having no further information. — James L. Ricketts, the last we heard, was looking for a business connection after serving as a civilian property and supply officer for the Army Air Forces, Air Technical Command, from July, 1942, till April 12, 1946. He says he was "in charge of supply research for spare parts for all planes manufactured by the Bell Aircraft Corporation; namely, P-39's, P-63's, and the jet propulsion plane, P-59; also planes by the Curtiss Airplane Division; that is, P-40 pursuit and C-46 cargo ships; and finally for about one year before D-Day, parts for the central fire control

systems for B-29's, P-61's, A-26's, B-17's, B-24's, and P-47's. Incidentally, this work was very interesting — 'keeping them flying' the world over by supplying a 'usable' part when the part originally requested could not be supplied. This required some intensive digging by personnel at times, but eventually we came up with something. I can now say that, in the African campaign, only 2 per cent of all planes involved were grounded for lack of spare parts. This fact was cited last year in a communication from General H. H. Arnold of the Army Air Forces to the Air Technical Service Command."

Albert Haertlein is receiving congratulations on his election as director of the American Society of Civil Engineers, accredited to District Number Two. Just in case you are interested in all the things that can be written about him, Albert is Gordon McKay professor of civil engineering at Harvard University; a member of the Board of Registration of Professional Engineers and Land Surveyors in the Commonwealth of Massachusetts; a fellow of the American Academy of Arts and Sciences; and a member of the American Society of Civil Engineers, the American Concrete Institute, the American Society for Testing Materials, the American Railway Engineering Association, the American Welding Society, and others. He is a past president of the northeastern section of the American Society of Civil Engineers and of the Boston Society of Civil Engineers and is now president of the Engineering Societies of New England.

I hope to be at the dinner on Alumni Day, June 8, which at this writing is but two weeks away and will be past history when these paragraphs reach print. Unfortunately, Alexander Magoun won't be with us, as he will be on the way to Oregon, where he is to have a class and a seminar in the Oregon State summer school session, as well as doing four radio broadcasts, conducting the first college convocation, and — of all things — contributing two papers to the Institute for Town and Country Pastors! — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

This issue concludes the class notes for the present volume; your Secretary wishes the Class a very pleasant summer and will hope for news of activities for the next issue, in November.

Howard McClintic is back on the scene at Ferguson and Edmondson Company, Pittsburgh, after having been placed on inactive duty on September 13, 1945. Howard says he spent four weeks down South playing poor golf. George McCarten was in the office this week on one of his visits to New York and is doing very well with his manufacturing firm (the Armstrong Company) in Detroit. He wanted to be remembered to the Class and would be pleased to have anyone passing through Detroit get in touch with him. D. A. Lundquist, Commander, U.S.N.R., 8012 Piney Branch Road, Silver Spring, Md., writes that he is still in the Navy and has not seen any of our Class in the years of his wanderings.

Martha Taylor, Cambridge, Mass., has written asking to be removed from the class roll, since she took only two courses

at M.I.T. Jimmy Reis is still with Northrop Aircraft, Inc., at Hawthorne, where he is working on the big XB-35 Bomber and the F-15 Reporter for the Army. Jim still lives at 3317 West 5th Street, Los Angeles 5, Calif. Francis A. Weiskittel will be relieved from active duty in the Army, effective July 12, and will resume his activities and residence in Baltimore. He writes, "I enjoy reading about our classmates of long ago in The Review notes. You are doing us all a real service."

H. Stanley Weymouth of Augusta, Maine, is with the Maine state highway commission, where he has been located since the end of World War I. Henry enjoys seeing classmates when they pass through Augusta on fishing, hunting, or vacation trips. He has seen Art Blake recently. It has been noted that three of our classmates are active in the Technology Club of Chungking. Hsi Mou Li, Sung-Sing Kwan, and Kuang-Piao Hu. We hope they will write us news of their activities. Edgar F. Seifert, 95 Industrial Road, Hammond, Ind., writes: "Not being an extrovert, I cringe at trying to say how good I am or what big things I am doing. I am still trying to operate my own business despite the numerous bureaucratic interferences and restrictions. When you are out this way, maybe you can call me, and I'll buy you a dinner."

Jim Strobbridge has nothing new to report. He is out of the Army — "No medals, no awards, no errors — but I'm glad to be back on a civilian five-day week after four and a half years of 16 hours a day, seven days a week." Arthur E. Wales and Ellsworth G. D. Paterson wrote sending their best regards but had no news to report. George Michelson telephoned early in May and stated that things were going well with him and that he sees the Boston group frequently. Oscar A. de Lima has been promoted from the rank of lieutenant commander to that of full commander. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York, N.Y. ALAN G. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

1920

Because these notes go to press before the reunion, I shall have to report to you on that by mail or in the next issue of The Review.

As a result of our reunion letters, I received word from Mrs. Helen I. Smith that our classmate H. H. Smith had passed away on April 20 at the Cleveland Clinic Hospital after a long illness. He lived in Hamburg, N.Y. Mrs. Smith writes: "I know Hart would have made plans to attend the reunion at Pine Orchard and that he would have me wish you the best of everything." I have assured Mrs. Smith that every one of us extends to her the deepest sympathy and shares in her great loss.

Dorothea Brownell Rathbone was kind enough to send your Secretary an invitation to her daughter Dorinda's wedding to Carlos Dew, Jr., Ensign, U.S.N., on the 6th of June at the chapel of the Naval Academy in Annapolis.

Ray Perry has come back from Illinois and is with the Maxson Food Systems, Inc., at 460 West 34th Street, New York. Ray

Collard has left the Army, in which he was a captain, and is living at Menlo Park, Calif. Eric Etherington has moved from Pennsylvania to New York City and is staying at the Hotel Van Rensselaer. The office of the Eric Etherington Company is at 76 William Street, New York. Eric's son is at the Institute, living with his wife at Westgate, the Institute's housing project for married students. He was missing for nearly six months after crashing in a B-29 and being held a prisoner of the Japs at a Rangoon prison camp until the British came down from Mandalay. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

This issue of The Review, completing the current Volume 48, is mere routine to the Publisher and Editors, for whom it simply ends another season of even more outstanding accomplishment on their part. For us, however, it has sentimental significance as the marker on the time axis denoting the completion of a quarter-century of reporting your doings. Whether or not we have presented the news in print that's fit for all, you have continued your generous support with letters and other encouragement which transform our editorial chores into pleasant duties. To you all go our sincerest thanks and appreciation.

For you our 25th reunion, which is just around the corner at this writing, will now be a historic bright spot in class annals, reflecting the able planning and administration of Dan Harvey, Zam Giddens, Ray St. Laurent, and the many others who served to put the program into effect. News of Alumni Day and Osterville must be deferred for publication in the fall.

Zam Giddens and his class gift committee will continue their solicitation of funds until the World War II Memorial presented by the Class becomes an actuality. Jack Rule is proceeding with the architectural arrangements. The list of donors must include the name of every living member of the Class and Zam's group will be glad to have your assistance in achieving this goal. Approach the nearest of these regional committeemen: Mich Bawden, Boston; Art Brambach, Seattle; Ed Chilcott, Los Angeles; George Chutter, New York; Cac Clarke, New Jersey; Larry Conant, Washington; Wint Dean, St. Paul; Herb DeStaeble, St. Louis; Ed Farrand, Chicago; Sumner Hayward, New Jersey; Irv Jakobson, New York; Harry Junod, Boston; Jack Kendall, Salt Lake City; Dan Kepner, Denver; Chick Kurth, Boston; Bill Loesch, Cleveland; Dick McKay, Washington; Trev Peirce, Philadelphia; Paul Rutherford, Detroit; Ray St. Laurent, Connecticut; Bill Sherry, Tulsa; Whit Spaulding, Baltimore; Lyall Stuart, New York; Eliot Underhill, San Francisco; Dick Windisch, New York; Miles Zoller, Cincinnati.

Harold H. Cake, VI-A, Vice-president of J. E. Haseltine and Company, Portland, Ore., replied to our post-card inquiry with a letter of regret at not being able to come East for the reunion. Cookie says that two Hexalphas have dropped in to see him regularly, Rufe Shaw, Jr., of Philadelphia and Bill Matthews, who comes down from Spokane once a year. For the record, Cookie says: "Since leaving the Institute, I spent about two years with one of the local

power companies in transmission design, 11 years with the General Electric Supply Corporation on sales of transmission equipment, and 11 years with my present organization, which handles mill supplies of all types as well as general electrical supplies and appliances, lighting equipment, sporting goods, and mechanical rubber specialties. For the present, a little two-year-old adopted daughter keeps us from getting too far away from home."

Maxwell K. Burckett, VI, continues in the advertising business as treasurer and assistant to the president of Morse, International, an affiliate of the Vick Chemical Company. Writing from his home at 9 Oberlin Street, Maplewood, N.J., Max says that in the latter part of the winter he had a bad fall on the street which left him with a serious leg injury. What with crutches and a cane, he has been getting to his New York office occasionally, but it will be four to six months before he will be able to drive and get around freely.

G. Everett Farmer, VI, whom we share with 1922, writes that new communications projects under his direction as communications engineer for the Tennessee Valley Authority and the job of finding a new home will keep him in Chattanooga, Tenn., this summer. In addition to ordinary telephone networks and power line carrier equipment, Gef's responsibilities also include a considerable amount of telephone line carrier operating over new gas-filled loaded cable, telemetering, load control, printer telegraph and remote control installations. Appropriately, he lives at Signal Mountain, Tenn., where mail can be addressed to Box 148.

Among those present at ladies' night of the active M.I.T. Club of Northern New Jersey were the following: Wolfe Brown, Mr. and Mrs. George Chutter, Mr. and Mrs. Sumner Hayward, Mr. and Mrs. Fred Kowarsky, Mr. and Mrs. Joseph Wenick, Mr. and Mrs. Carole Clarke.

Herbert A. Kaufmann, X, has been recently appointed director of development and research of the American Molasses Company, 120 Wall Street, New York 5, N.Y. Herb makes his home in New Rochelle, N.Y. William H. F. Rose, XV, has formed a new company known as the Aquatec Company and has forsaken the New Jersey area to open a plant at Shelton, Conn. One of our recent New York visitors was E. Randolph Haigh, XV, who is listed with '22 although he fought most of the last war with us. Randy still lives in Newburyport, Mass. Joseph A. Mahoney, X, called us up to pass along the good news that the silver oak leaves are in the top bureau drawer and he is back at the Bell Telephone Laboratories, New York. Joe also certified his intention of being present at Osterville. George Chutter, VI-A, tells us that he has formed his own company and is operating as a manufacturer's agent for electrical and heating equipment. His new office is located at 30 Journal Square, Jersey City, N.J.

Edgar S. Russell, II, wrote a welcome letter from his home at 520 11th Avenue North, St. Petersburg 4, Fla., which classes him with Curt Gardner as a champion of the Everglade State. In part, Russ says: "I came to Tampa in May, 1941, as senior civilian in the office of the Supervisor of Shipbuilding, United States Navy, after

having spent seven years as naval architect in the New York City office. Besides being chief draftsman, it was my job to build up the office, hiring technical, inspection, and clerical personnel for the Tampa Shipbuilding Company, Inc., which along with seven other Florida yards and a number of sub-contractors' plants, came under Navy supervision through our office. You may have some idea of what a task that was, considering that we are located in an area where skilled mechanical help is not available and it was necessary to recruit and train local people for all trades as well as for supervision. I have also worked in the yard on design of conversion jobs, and lately I completed an appraisal of all the Navy facilities. Unlike the long-established shipyards, where the war years were spent on the production of a few general types of vessel at each yard, Tampa Shipbuilding was not permitted to specialize, and I call it 'the shipyard where diversity paid off.' Thirteen types of vessels were represented in the 141 vessels classed as new construction since 1941, and 11 additional types were represented in the 15 vessels converted. At the same time, our repair and drydocking facilities accomplished work on over 450 vessels. You may be interested to know that, among the 16,000 of us who had a share in this work, were the following Tech men from Course XIII-A: Captain Douglas W. Coe of our Class and F. M. Earle '20, R. B. Daggett '23, and M. G. Vangeli '34, all captains in the U.S. Navy."

Although the figures are not final, our last tabulation reveals only 18 members of the Class who have returned to civilian status out of the 16 per cent, or 141 men, reported to have served in World War II. Remaining in the Army are 85 men, including four major generals, 13 brigadier generals, and 32 colonels. Of the 37 in the Navy, one is a rear admiral, and the largest group comprises 13 captains. One man is listed in the Maritime Service. Two men were killed in action; two died in service; one is reported missing in action and one, disabled in action. The 17 decorations so far reported include three Distinguished Service Medals, one Purple Heart, 11 awards of the Legion of Merit, one Bronze Star, and one award of the French Legion of Honor.

Ernest F. Henderson, Jr., XV, and Robert L. Moore, XV, who, with Ernie's brother George, operate the hotel and real estate empire known as the Sheraton Corporation, are reported to have acquired the famous Boston landmark, Thompson's Spa. Ralph G. Barrows, I, a colonel in the Corps of Engineers, is serving as commanding officer of the 5223d Engineer Construction Brigade and as deputy base commander on Okinawa. He has been in service for six years, three of them overseas. Previously, he was district engineer in Detroit, division engineer for the Great Lakes, engineer on the CINPAC staff, and executive officer of the engineer section of the Tenth Army.

Francis J. Magee, I, a colonel in the Signal Corps, was awarded the Legion of Merit for his outstanding services as signal officer of the Fourth Service Command with headquarters in Atlanta, Ga. Before being assigned to this command, he was staff assistant to the chief signal officer. He is on leave of absence from the Commonwealth of Massachusetts, where he has served for

many years as civil engineer with the department of public works.

Oliver L. Bardes, XV, is president of the Bardes Forge and Foundry Company, Cincinnati, and with Bob Dolle and Miles Zoller, constitutes the nucleus of the 1921 group of that fair city. Ollie has three children and lives at 6 Raeburn Avenue. Edmund G. Farrand, VI, is secretary and general manager of the United Conveyor Corporation, Chicago, Ill. Son David, who is now 15, will be remembered as the champion fisherman of our 20th reunion. Fred E. Kowarsky, X, president of the Union Chemical Corporation, Newark, N.J., was engaged shortly after graduation in the developing and manufacturing of transparent foils for wrapping. After service here and abroad, he became chief chemist for the Miner Edgar Chemical Corporation and later founded his own company. He was one of the group which sponsored the M.I.T. Club of Northern New Jersey and served as its treasurer for three years.

Joseph C. Morrell, II, is a real estate appraiser associated with Prince and Lockyer, White Plains, N.Y., where Buddie lives at 18 Ridgeway Circle. Christopher B. Nelson, XIII, is president of the Annapolis Yacht Yard, Inc., Annapolis, Md. George W. Pollock, XV, is the owner of his own floor-covering business in Milwaukee, Wis. Polly has three children, Nancy, who is 20, George, Jr., 18, and Lindsay, 11 years old. Antonio H. Rodriguez, X, is president of the San Agustin Sugar Corporation, Galiano 257, Havana, Cuba. Rodie will be remembered as the very active president of the Cosmopolitan Club during our undergraduate days. Harry Rosenfield, X, is the owner of a laundry business in Boston. He has four children — three girls and a boy.

John M. Sherman, X, is a research analyst with the Federal Reserve Bank of Boston and the author of several monographs on industry and employment in New England. His daughter, Margaret, is now 16 years old. Arthur A. Turner, I, is chief engineer of the Carborundum Company, Perth Amboy, N.J. He has a 16-year-old daughter and makes his home at Meruchen, N.J. Joseph Wenick, X, is factory manager of the Lightolier Company, Jersey City, N.J. He has two sons, Richard, 16, and Martin, who is six. Harry M. Witherow, VI-A, is superintendent of the aircraft instrument division of the West Lynn, Mass., plant of the General Electric Company. Duly added to the Junior League records published last month are the names of Karen and Susan Witherow, twin daughters who are now five years old. Are there any more entries in the Twins-Triplets Club now composed of the Hassold, Nock, Green, Rose, and Witherow families?

Palmer Scott, XIII, is president of Palmer Scott and Company, boatbuilders of New Bedford, Mass. He has two children, Duncan, 16, and Thalia, who is 10. Olin W. Scurlock, IV, operates his own real-estate business in Dallas, Texas. Son Gilson is now 15 years old. Ralph H. Price, X, is director of research, Pan American Refining Corporation, Texas City, Texas, and lives in Galveston. John is 20 and Nancy, 17.

If the first 25 years are the hardest, the next batch ought to be easy with your fine response. You put our class Alumni Fund figure over 100 per cent of our quota for 1945-1946, and early returns for this year

are most gratifying. More letters and news will always be welcome. Write now during the summer and help us open shop on these pages in the fall. A pleasant summer to you. —RAYMOND A. ST. LAURENT, *Secretary*, Rogers Corporation, Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

1922

It certainly would be difficult to find a man who, by experience, training, and proven executive ability, is better fitted for the job of directing the purchases of a huge corporation than is our Class President, Al Browning. After five years of outstanding service to the country, he has now returned to private enterprise as vice-president in charge of purchases of the Ford Motor Company. We assume that with the job there is assurance that he will have transportation to the reunion in 1947.

Conrad Ronneberg, a lieutenant colonel, was recently awarded the Bronze Star medal for outstanding initiative and ability in planning, organizing, and conducting the operation of the first Army Information Education Staff School in the European theater. He has now returned to the States and will presently be back in civilian clothes.

Major Harry Freedman has been awarded the Legion of Merit for his work as director of the mental hygiene division of the Army Service Forces Training Center at Camp Plauche, New Orleans. He entered the Medical Corps on leave of absence from his civilian position as director of the classification clinic at Clinton Prison, Dannemora, N.Y.

Bob Russell, President of the Standard Oil Development Corporation, has been awarded an honorary degree of doctor of science from Clark University.

Keith Robbins' sister has kindly let us know that Keith is now serving under the War Department as director of the Bureau of Commerce in Korea. He left the States in March to take up this work. Perhaps it is too much to hope that he will be back in the country for our 25-year reunion to give us a first-hand story of conditions in the Orient.

The Minneapolis papers recently had an interesting article about Charles C. Fulton, who is acting chief chemist of the laboratory of the Federal Narcotics Bureau in the post office in Minneapolis. Fulton would be a handy man to have around the reunion.

The first mailing in connection with the 25-year reunion, a year hence, has already gone out. It is an effort to get an indication in advance of the probable attendance, in order that we may engage suitable quarters. If you have not returned the postal card, please help the cause along by doing so at once. —CLAYTON D. GROVER, *Secretary*, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York, N.Y. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N.Y.

1923

John F. G. Gunther, whose death in Hancock, N.H., I reported in these notes last month, was a former assistant professor of architecture at the Institute. A clipping from the Boston *Globe* said that his death

had followed a long illness. He leaves a wife and triplet daughters.

J. H. Cox was appointed engineering manager for the Westinghouse Electric Corporation's Pacific Coast manufacturing and repair division headquartered at Emeryville, Calif., according to a release from the company in April. From 1930, and until his recent transfer to Emeryville, Cox had been acting as manager of the mercury arc rectifier engineering section in the transportation and generator division of Westinghouse. The release reports that Cox helped to engineer vacuum and leak detecting apparatus for the atomic bomb project.

James M. Robbins is associate professor of civil engineering at the Newark College of Engineering. The *Newark Call*, in its issue of April 21, devoted most of a page to a tilt between Jim and Frederick W. Lee, a Baltimore geophysicist. Dr. Lee had proposed that the climate of the Atlantic Coast be improved by widening or deepening the Florida Strait to permit a greater flow of tropical water in the direction of the East Coast. Jim said he was retorting on the basis of meteorology, which he has been teaching to Army students at the college. A large body of warm water off the Florida Coast, Jim says, would create a semipermanent low-pressure area. The flow of polar continental air masses toward this low-pressure area would be encouraged — hence, not tropical conditions on the Atlantic Coast but winters as severe as those in northern New England.

J. K. Clapp reports that after teaching at Technology until 1928 he left to go with the General Radio Company of Cambridge, and he says he has been working mostly on frequency standards and frequency measuring equipment. A good deal of this, he says, has been for the Navy. — Richard L. Bowditch, who is also a member of the Technology Corporation, was elected chairman of the governing board of the Maritime Association of the Boston Chamber of Commerce. He is president of C. H. Sprague and Son, Company.

P. B. Alger reports that he went into the Navy in March, 1942, and spent his last three years in the service as resident inspector of naval materials at Stromberg Carlson Company in Rochester, N.Y. He retired from the service with the rank of lieutenant commander on January 2 and went with the Sprague Electric Company of North Adams, Mass. He is going to be located for the company in Camden, N.J. but hasn't yet found anything more than a temporary residential address. — Raymond P. Harold, President of the Worcester Federal Savings and Loan Association of Worcester, Mass., was elected, in May, president of the National Savings and Loan League.

Jack Keck contributes two items this month — the first, about R. G. Rincliffe. In its annual report to stockholders he says the Philadelphia Electric Company announced that Rincliffe had been elected a vice-president in charge of electrical operations. Jack's second item is a clipping from the *Newark Evening News*, May 15, about William J. Lutz. Lutz had been assistant engineer of manufacture at Hudson, N.J., for the Public Service Electric and Gas Company. His duties have been changed, according to an announcement of the president of the company, to those of assistant engineer of construction. — HORATIO L.

BOND, Secretary, 457 Washington Street, Braintree 84, Mass. HOWARD F. RUSSELL, Assistant Secretary, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

1925

Here are a few items of interest to finish off the '25 news for the current volume of *The Review*. The first concerns Henry C. Hoar, who on January 1 was appointed St. Louis sales office manager of the National Tube Company, the United States Steel subsidiary. Hank has been with the company nearly 20 years. He started out in the metallurgical side of the business, and then became a field engineer. Later, he was transferred to the job of sales representative, on which he continued until about the time of the outbreak of the war. The company then sent him to Washington as its official representative there. Hank says that he practically "lived with" the War Production Board during the war years. In April, the Technology Club of St. Louis held two social affairs on successive days, one a reception for President Compton at the home of Delos Haines in University City, and the other a garden party at the St. Louis County estate of Joseph Desloge '12. Hank and his wife were able to get to both of them. Mrs. Hoar was, before her marriage, a resident of Richmond, Va., where her family still lives. She and Hank have two children — a boy eight years old, and a girl who will be a year old when the July Review reaches you.

The next item is about Ralph Ilsley, by this time an old Washingtonian. It comes in the form of a clipping from a Haverhill paper, and was sent by Mrs. Ilsley's sister, who is my wife's stepmother. Since it is not excessively long, I'll quote it in full: "The commendation for exceptional civilian service, highest honor conferred upon War Department civilian employees, was awarded Dr. Ralph Ilsley, former Haverhill resident, by Brig. Gen. Alexander G. Gillespie, chief of ordnance industrial service, this week at ceremonies held in the Pentagon Building, Washington, D.C. Dr. Ilsley's wife, Mrs. Sarah Louise Ilsley, and a large gathering of ordnance department friends and associates attended the decoration ceremony. General Gillespie read the citation commending Dr. Ilsley for 'outstanding achievement in the analysis and screening of requirements for high explosives, smokeless powder and raw materials; and the synchronization of estimated requirements with the construction of government plants.' Dr. Ilsley has been technical advisor to four successive chiefs of the ordnance industrial ammunition division since 1940. Dr. Ilsley is a veteran of World War I. He was graduated from the M.I.T. in 1925 and received his doctor's degree from the Institute in 1934. He spent 10 years with oil companies in Texas, Oklahoma, and Germany. Before joining the ordnance department he worked in the Department of the Interior for six years." Ralph's position in the latter department was with the Bituminous Coal Commission, in which capacity he not only worked in Washington, but also made numerous trips to other parts of the country on Commission business. Mrs. Ilsley is the former Sally Wentworth of Plaistow, N.H., just across the state line from Haverhill, Mass. They make their home at 4400 Davenport Street, Northwest, Washington,

D.C., where Ralph relaxes in a very fine flower garden which is his pride and joy.

From Doc Foster comes a clipping announcing the nomination of Richard D. Jackson as president of the Tampa, Fla., chamber of commerce. He has just completed two years as vice-president of the chamber. He is vice-president of the Jackson Grain Company of Tampa. Members of 1924 will be interested in this item, as Jackson originally belonged to that class, although he was graduated with us. In his letter, Doc adds this item: "Scott Emerson dropped in recently. He is now vice-president of the Management Research Group, Inc., 118-124 West Pearl Street, Cincinnati, Ohio. This is a new company with multiple interests."

The *New York Journal of Commerce* for January 11, reports "the appointment of Norman L. Mansfield as public utilities engineer in the Bond Department of the Prudential Insurance Co. . . . Mr. Mansfield, who has been assistant public utilities engineer since 1939, entered the service of the Prudential in January, 1933, as a statistician in the bond department. After preparing at Phillips-Andover Academy, he was graduated from the M.I.T. in 1925. He and his wife, the former Miss Phoebe Lamont, of Newark, live with their two daughters at 12 Cambridge Road, Glen Ridge."

The final item is about the marriage of our old friend Henry Sachs to Mrs. Jane Gutman Adler of 49 East 86th Street, New York, daughter of Mr. and Mrs. Monroe C. Gutman. The wedding took place on April 15. Supreme Court Justice Henry Clay Greenberg officiated. The *New York Herald Tribune* continues: "The bride was graduated from Fieldston School and attended Wheaton College. . . . Mr. Sachs was graduated from the M.I.T. and served in the Pacific, Middle East and Mediterranean war theaters. He received the Silver Star and the Legion of Merit." Not mentioned in the item is the fact that when Henry first entered the Army he served in the "Washington theater," which some consider more dangerous than the "shooting" theaters. — HOLLIS F. WARE, General Secretary, P.O. Box 52, Godfrey, Ill. F. LEROY FOSTER, Assistant Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

1926

The sun never sets on the Class of 1926! Last month we reported on the activities of classmates in China and Canada. This month we have news from Chile and India, as well as from Illinois, Texas, Tennessee, Kentucky, Ohio, Pennsylvania, New York, New Jersey, Massachusetts, and the District of Columbia.

While enjoying a "spring" holiday at Punta Arenas (Magallanes), the southernmost city in South America, Bull Roberts of the Andes Copper Mining Company sent the following welcome note to his former teacher, Professor Charles E. Locke '96: "Ann, Rex, Elizabeth, and I are taking our yearly vacation here . . . on the Straits of Magellan. I was very fortunate in being able to fly out to the island of Tierra del Fuego, which extends to Cape Horn. . . . We landed on several airports, some of which were only 500 yards long. This was quite an achievement for a Douglas

C-47 and was the first time any such large plane had even used these airfields. . . . It is extremely different here from northern Chile, and every visitor is greatly impressed by the snow-capped mountains, glaciers, and vegetation, which all add up to some marvelous scenery. . . ."

From India, Shantanu Kirloskar of Kirloskar Brothers, Ltd., sends word that his son is now in Boston, studying at the Chauncy Hall School, with the hope of later being enrolled at M.I.T. Another classmate who has a son almost ready for college is Ted Mangelsdorf of Lockport, Ill. Accompanying a generous contribution to the class endowment fund was a note in which Ted expressed the hope that his elder son would be graduated from the Institute with the Class of 1951.

J. Burgess Coleman, formerly a senior engineer with the War Department, has recently become chief engineer with the Western Condenser Company in Watseka, Ill. — Donald Nelson's arrival in Dallas, Texas, last spring was reported thus in the local press: "Donald S. Nelson, chief of planning and design for the air installations division of the Army Air Forces during World War II, has established architectural offices in Dallas. . . . Nelson's war work included control of planning for airfield developments. He was chairman of the joint Army-Navy commission on airfield layout planning and standards. . . . Nelson studied at the Ecole des Beaux Arts in Paris. He was with the Chicago firm of Bennett & Parsons, which did much of the architectural work on modern federal buildings in Washington."

After an interlude in Massachusetts, Francis McKeon has returned to Oak Ridge, Tenn. — Albert Entwistle writes from Louisville, Ky., of a pending trip to Africa. — The gap left in Cleveland by Kenneth Lord's transfer to the Reliance Electric and Engineering Company in Philadelphia has been filled by Elton Staples, whose new business address is Union of Commerce Building, Cleveland 14.

Paul Mahoney is now with the Spraylat Corporation in New York City. — It was pleasant to hear from A. P. Gabrenas, whose war service took him all over the country. With his wife and two sons, he has now settled again in Trenton, N.J., where he has resumed his work with the New Jersey state highway department. A civilian again, David Powers is with the R.C.A. Service Company, Inc., in Camden. A newcomer to New Jersey is Reginald Wakeman, until recently with the Mellon Institute in Pittsburgh. He is now co-ordinator of research for the Richards Chemical Works in Jersey City. — Ralph Adams of Concord, Mass., is with the War Assets Administration in Boston.

One final item of note, before this sustaining feature gives its listeners their annual three-month respite — interregnum, that is: We are proud to announce that Theodore Norton has received the Distinguished Civilian Service Award for his war work at the Bureau of Ships of the Navy Department. The presentation was witnessed, among others, by Theodore Soohoo, Lieutenant Colonel Robert W. Rogers, and James MeVay. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

This month the Class has been featured in the press of the nation: Peters, Badger, Wise, and Payne have made the headlines. A Dayton paper carries a picture of Bill Payne looking much the same as 20 years ago, with the following comments: "At the annual reorganization meeting of the board of trustees of the Dayton YMCA last night, William G. Payne was elected president of the association. Payne, president of Payne and company, has been a member of the Dayton YMCA for 19 years and a member of the board of trustees since 1941, serving as vice president during the past year. During his YMCA membership he has participated in many programs of the association and has been a member of the World Service committee, the education committee of the YMCA college, the restaurant committee, the executive committee, the endowment committee, and chairman of the publicity and public relations committee." Bill adds the following autobiographical comments: "I now have two children, Mary Ann, aged nine, and Douglas, aged eight. I am still in the same business — the national wholesaling of upholstery and drapery fabrics and for the last four years have been spending at least a week of each month in New York, Philadelphia, and vicinity, together with one of my associates, in the endeavor to locate fabrics." His address is Payne and Company, Box 987, Dayton, Ohio.

Bob Wise is eulogised in the following terms: "Robert Wise, president of the National Ice Cream Company in East Boston, was elected president of the New England Association of Ice Cream Manufacturers for a two-year term, at the organization's annual meeting held at the Copley Plaza Hotel on January 17. Mr. Wise has long been an active member of the Association, whose membership represents 95 per cent of the wholesale ice-cream gallonage in the six New England states, having served as its vice-president for two years and as chairman of the Boston district for that same length of time."

The Rutland, Holyoke, and New York papers carried news of Jack B. Peters' wedding. The following is quoted from the New York *Herald Tribune*: "Miss Virginia Wilcomb and Mr. Jack B. Peters were married . . . [on March 23] in the chapel of the Madison Avenue Presbyterian Church, by the pastor, the Rev. Dr. George A. Buttrick. The bride is the daughter of Mrs. Roy M. Wilcomb, of San Francisco, formerly of Springfield, Vt., and the late Mr. Wilcomb. She was graduated from Mr. Holyoke College. Wedding attendants were Miss Janet Paine and Mr. Oliver Kingsbury. A small reception was held at the Hotel Westbury. The bridegroom is the son of the late Mr. and Mrs. Thomas P. Peters of Brooklyn. Graduated from . . . Technology and Harvard Graduate School of Business Administration, he served as a major in the Signal Corps. He is now with the advertising firm of Kastor, Farrell, Chesley and Clifford."

A picture of Sid Badger in the Worcester *Telegram* shows that he still has not succumbed to any sign of baldness and is looking pretty "keen." The details are as follows: "F. S. Badger, vice-president of the Haynes Stellite Co., Kokomo, Indiana, will speak

Jan. 9 on 'Precision Castings' at a meeting of Worcester Chapter, American Society for Metals, in the Sheraton Hotel. Dinner will be at 6:30 p.m., followed by the speaking program at 8. J. Adams Holbrook, chapter chairman, will preside. Mr. Badger will be introduced by Arnold L. Rustay, program chairman. He will speak on dental and jewelry processes from which industrial methods have been developed. Details of production, suitable alloys and types of industrial application will be discussed. Slides will be used."

Alf Berle writes as follows: "I have been with Mr. Arthur D. Little's research organization in Cambridge since last October and am glad to be back in these parts after a hectic year or so commuting to Washington and the Office of Scientific Research and Development. My boy, Roger Kort Berle, is three and one-half years old now, and he's way ahead of his daddy in several respects — including energy."

As predicted, your Secretary's trip to Latin America took place in April. He came back with some idea of what goes on south of Miami and with a coat of tan which was very much envied. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N.Y.

1930

Our congratulations to Gil Cox and Ernie Reisner! Gil was married in February to Jeanne Haenigsen of New Hope, Pa. Gil is in charge of the development and research division of International Nickel, with his headquarters in Rochester. Ernie's engagement to Barbara Watters of Arlington, Mass., was announced in March. They were married in Winchester on May 1. Horace Myers has been appointed district engineer of the Westinghouse lamp division's southeastern district and is making his home in Atlanta. Howie Robinson, chief physicist of the Armstrong Cork Company, is the new chairman of the executive committee of the division of high-polymer physics of the American Physical Society. To correct information previously appearing in this column, the name of Scotty's new firm is the Technology Instrument Corporation, specializing in the design and manufacture of electronic and laboratory apparatus. Scotty as president will also have charge of technical development. . . . Best wishes for a pleasant summer and for the continued improvement of our Class in the Alumni Fund standings. We took a big step forward in 1945-1946 and will try to do just a bit better in the current campaign. Let's give Phil Holt all the support we can muster. He has been doing a great job as class agent! See you in the fall! — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass.

1933

Now that we have this column re-established on an active basis, please feel free — indeed, please make it a point — to send me a postal card with any news you think may be of general interest. Such a miscellany makes very good reading for the rest of us, and we hope to have a bang-up column for November, the first issue after reunion. Your Secretary is happy to

pass along the following information, received during the month preceding this May writing.

From Morris Guralnick, 1339 Cornell Avenue, Berkeley 2, Calif. comes the following: "You ask me if there is a story to tell, and perhaps there is. It seems to me that we went on a fishing trip together about 10 years ago. Maybe you remember it — it was in Sheephead Bay. At that time I was working for Gibbs and Cox of New York. You probably recall that this organization has done a fine job on the Naval program which began in 1933 and is just about winding up now. After spending six years with that firm, I went to Philadelphia to work for the Cramp Shipbuilding Company and eventually took over a part of the estimating department. This organization built cruisers, submarines, and various small craft for the Navy. More recently, about a year ago, I left the East Coast and brought my family with me out here to Berkeley, Calif., having taken a job with the Kaiser Company for the purpose of getting in on the ground floor of its ship repair program, begun about a year ago. The company required a man familiar with estimating work and particularly ship repair estimating work. I have now become the chief repair estimator for the company in this area. In addition, I have occasional problems relating to new ship construction. Thus the last 10 years, to me, have been very interesting. During the same period I have managed to build up my family to two children."

From Bill Miller, 5716 Kendall Avenue, Los Angeles 32, Calif.: "Dill Collins having mentioned to you that I am in Los Angeles, it seems time to drop you a line. As you probably know, in November, 1938, I went to work for the United States Civil Service Commission in the Philadelphia office. After 18 months I was transferred to San Francisco, Calif., just in time for the preparation for war. There was a mushroom growth of military installations when things started, and I had some interesting recruiting jobs. For instance, in 1940, I recruited the first groups of tradesmen for work at Pearl Harbor, T.H., and sent the first two groups over on battleships, so urgently were they needed. Most of my work, however, involved the recruitment and placement of engineers and other scientific and technical personnel, here in California. Then in February, 1943, I was transferred to Los Angeles, where I held various supervisory positions. In college I had had more than one attack of arthritis. It gradually got worse. I went to work on crutches all the time. Medical treatment did not help. Finally, last October, I gave up and went to a hospital for two months or so. I haven't worked since, and I think I have the dubious distinction of being the first member of the Class to retire. (On the basis of about nine years of Federal service I am entitled to a disability pension of \$15 or \$20 a month.) I am slowly rebuilding my health and in six months may be well enough to go back to work. Well, enough of my troubles. I keep pretty good tabs on Dill Collins because he's my brother-in-law, and my wife and my sister keep up a correspondence. The last I heard, Alanson Bowen was still with the American Optical Company of Southbridge, Mass., and doing well. Paul

Netherwood was with that textile mill in North Adams, Mass. My information on both of them is pretty old, though. Bill Wessel (all 6 feet 4 inches of him) is a metallurgical engineer with the United States Bureau of Mines in Boulder City, Nev. (or was some months ago). Please remember me to any of the fellows who can recall my physiognomy."

From Cal Mohr, Post Office Box 81, Ringwood, Ill.: "On the train coming home, I met several men from the Hawk-Eye Works in Rochester, and they said that David Babcock of our Class has quite a responsible position there. I stopped in Rochester and saw Bob Smith, who is production manager of the Defender Division of Du Pont. Bob is the proud father of three children and is most active in Rotary Club work. I had a very informative visit with Bob and hope to be able to see his home the next time I am in Rochester. The Chicago Alumni recently had a dinner for Dr. Compton, and Charles Thumm reports that he was on the west coast during the war, installing piping on ships. He still maintains his own company in addition to the work he does in Chicago. Robert Seyl and Gerard de Gelder were the other classmates who were present. Evidently the numerous members of our Class in Chicago before the war have settled in other sections of the country. I met many old dorm inhabitants, most of whom I had not seen since I left school." — GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

1934

John Burwell, who was a Naval Reserve commander in the Office of Research and Inventions, has been given a commendation by the Secretary of the Navy for staff duties performed during the war. The presentation was made by Rear Admiral Harold G. Bowen '37. The citation reads: "For outstanding performance of duty as staff officer to the Co-ordinator of Research and Development from April, 1942, to May, 1945. Displaying a broad knowledge of magnetism, acoustics, lubrication, and other fields of physics vital to the extensive antisubmarine campaign carried out at a crucial point in the war, Lieutenant Commander Burwell played an important part in the development and consolidation of a program dealing with the telescoping of underwater sound detection and was in large measure responsible for bringing together operational and technical officers as well as civilian scientists to be welded into an effective team for carrying out this important project. In addition, he rendered invaluable service in the development of countermeasures to the German acoustic torpedo, which contributed materially to the successful prosecution of the war. His conduct throughout was in keeping with the highest traditions of the United States Naval Service." Before reporting for duty with the Navy in April, 1942, John was a research associate at the Institute in charge of the Lubrication Laboratory. He has now returned as assistant professor of mechanical engineering.

Paul Grueter also received a citation. Lieutenant Grueter was awarded the Army

Commendation Ribbon by Lieutenant General Oscar W. Griswold, Commanding General of the First Service Command. The citation reads as follows: "For the performance of outstanding service as post engineer HD of New Bedford, Fort Rodman, Mass., from August, 1944, to March, 1946. Results of his aggressive action, detailed planning, and technical knowledge were demonstrated during this period and when loss of key personnel would have normally handicapped operations. His energetic, conscientious attention to duty and superior professional ability prevented a breakdown of essential missions materially contributing to the successful prosecution of the war effort."

Another award went to Hal Reynolds, who has been a civilian since May. As Captain Reynolds he received the Army Commendation Ribbon Oak Leaf Cluster from Colonel Lawrence J. Meyns, Chief of the Boston Ordnance district. He was commended for outstanding performance of duty while chief of the rifle section, Small Arms Branch. We are sorry to say we have no copy of the citation.

Here is some interesting news about some of the fellows which appeared in "Departmental Gossip," a sheet put out by the Department of Building Engineering and Construction: Robert M. Becker of 42 North Gate Park, West Newton, Mass., is married and has one child. During the war he was employed by the Raytheon Manufacturing Company of Waltham, Mass., in the electronics (radar) division but is now a consulting engineer on his own. — Martin F. Cosgrove of 54 Charlotte Road, Waltham, Mass., is married and has two children. He has been connected with the development and construction of the Metropolitan Water Supply of Boston as assistant civil engineer, building dams, tunnels, aqueducts, and control works, and with the operation of them. He is now starting on a program of sewage disposal construction for Greater Boston in an effort to clean up the harbor. — Samson I. Crew of 2815 Grandin Road, Cincinnati 8, Ohio, is married and has two children. He is vice-president of the Crew Builders Supply Company at 2120 Madison Avenue, Norwood 12, Ohio.

Arthur Bradford Ellenwood, Jr., of 30 Drayton Avenue, Dorchester, Mass., is married and has a boy, John B., now 17 months old. He is at present operations manager with Horn Brothers, builders, at 23 Miner Street, Boston. — Samuel Joroff of 1442 51st Street, Brooklyn, N.Y., has been a major in the Civil Engineering Corps. He went on active duty December 8, 1941, and served about 10 months with the engineer section of the First Air Force at Mitchel Field. He spent three years overseas connected with the camouflage and construction of airfields in French Morocco, Algeria, Tunisia, Italy, and Southern France for the 12th, 15th, and 9th Air Forces. He was also a camp engineer for assembly area camps in France. He expected to be discharged about April 1. — Eugene O. O'Brien of 4934 West Superior Street, Chicago, Ill., is married and has two children. He is in business for himself as a contractor — the O'Brien Company, 5916 West Division Street, Chicago, Ill.

Jack Platt of 60 Lane Park, Brighton 35, Mass., is married and has two children. He

has been doing mostly government work since 1939. From 1940 to 1943, he was assistant project manager in charge of ten million dollars' worth of construction work. He is now vice-president and chief engineer of the Platt Contracting Company, Inc., at 169 Bridge Street, Cambridge 41. — Vincent Rother of 7, The Grove, London N.G., England, is married and has one child. Since 1940 he has been in His Majesty's Armed Forces (Army), with the Royal Engineers bomb disposal unit, then as senior instructor at the School of Military Engineering (major), then as a staff officer with the British Second Army in Normandy. He was wounded and spent seven months in the hospital, then was discharged, and is now in private architectural practice. — Bert O. Summers of 1740 Broadway, San Francisco, Calif., is married and a copartner of Erbenraut and Summers, general contractors, 446 Sixth Street, San Francisco, Calif., since 1940. He is also director of the Central California chapter of Associated General Contractors.

Henry Clay Miller, a commander, was married on March 23 to Carol Ruth Lasher, daughter of Mr. and Mrs. Albert C. Lasher of Atlanta, Ga. Mrs. Miller was a junior grade lieutenant in the WAVES and spent two years of duty in Washington.

Bob Roulston, our Class Agent, has asked us to act as a department for missing persons. It seems that some of our classmates have disappeared into thin air. Mail addressed to them comes back unclaimed, and for all we know, they are the victims of foul deeds or black magic — at least so we must assume until we know more of their whereabouts. We are listing the names of these lost souls, and if any of you knows the address of one or more of them, will you please drop a card to Chick Kane '24 at the Institute? We will appreciate it very much. Here they are: Alfred C. d'Arcey, Donald G. Arndt, William H. Bacon, Jr., Adalbert E. Benfield, John F. Burke, William W. Buttm, Paul A. Chapman, Victor B. Cole, Edward W. Donahue, Roland D. Eaton, Carleton Ellis, Jr., Frank G. Feeley, Jr., Harry Fine, Warren D. Ford, Salvatore Genovese, George H. Graff, Albert C. Hodson, Angelo Iantosca, John C. Kennedy, Joseph G. Kubitsky, Lester S. Leavenworth, Franklin H. Lobdell, William J. McAvoy, Carlos C. March, Gillette K. Martin, Theodore H. Morehead, James F. Mullen, Thomas F. O'Callaghan, Neil F. Putman, Kenneth R. Rand, Kelsey Y. Saint, Kenneth N. Scott, Stanislaw A. Shumowsky, Omar H. Somers, Eric Sparre, John H. Spencer, Holger Struckmann, Willis E. Toon, Alfonso Uribe, William M. Watson, Richard H. Welles, Edwin L. Williams, George A. Zeller. — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Exploration Company, Chuquicamata, Chile.

1935

The reunion boom has started! Fred Lincoln read his May Review down in Texas and immediately wrote that it will take an atomic bomb to keep him away. Fred was just about to sell his house in Houston, where he has been manager of General Chemical's local office, to return to either Providence or Boston. He spent most of the war period in West Virginia as super-

visor in a T.N.T. plant. Fred reported that Bob Scribner, when last heard from, was still in the Pacific as a captain in the Army Medical Corps. Apparently a Mrs. Scribby and a young Scribby also exist, though somewhat anonymously for us.

Another welcome letter came from Don Gutleben, now back at his old job of engineering for the Spreckels Sugar Company in San Francisco after four and one-half years in the Army. Don considered himself pretty lucky in his Army assignments, having spent all his time in North America as post engineer at various stations ranging from San Francisco to the Yukon Territory. In describing his duties, Don came up with this entry for the Non-Stop Sentence Derby: "Post engineer is the guy who keeps the buildings from falling down, fills the holes in the streets, tends the posies around headquarters, repairs the colonel's electric razor and his lady's sewing machine, fixes the plumbing, operates the heating, cold storage, ice, and sewage disposal plants, chlorinators, and incinerators, supplies the water, gas, and electricity, collects the garbage, dashes to all the fires or plane crashes, shoos away the insects, rodents, and vermin, furnishes janitorial service, tries to keep his organization running smoothly despite reports, inspections, and visiting firemen, and finally tries to abide by Army regulations and still keep the 'old man' happy." Sounds as though Don's wife and four-year-old daughter might be all set for a life of ease now — and wouldn't he be a handy guy at the reunion?

This month's \$64 question: Where is Fiske King? — Paul Panagiotakos dropped in for a visit at Technology the other day. The Panther is still a professor of organic chemistry at Lowell Textile and is also active in consulting work. He said that Mike Kelakos, his cousin and classmate, is now home from Berlin but likely to go abroad again. Paul has two children, which is approximately the average for our Class so far (very unofficial!).

Al Boyajian has received much acclaim from the aeronautical industry for his innovations in the design and manufacture of aircraft. Working for Republic, Al has accomplished some remarkable feats of reducing manufacturing time and costs while simultaneously improving performance. In redesigning the Seabee, for example, he increased passenger space, horsepower, and wing area appreciably, while reducing the number of parts from 1,800 to 450 and the fabrication time from 2,500 to 200 man-hours. Ermano Garaventa is now process development engineer at the Hamilton Propeller Division of United Aircraft at Hartford. Garry has been in charge of the company's production of its new hollow steel blade.

This column would not be complete without a mention of the way in which Jack Colby has held his reunion committee spellbound with his thrilling accounts of the operations of the Office of Strategic Services in Europe and Asia. If Jack weren't so busy for Johnson Service Company, we know he could become a rival of Graham Greene and Eric Ambler. Before you read this, you will have received a questionnaire from the committee. Even if you can't get to the reunion (clearly a nonsensical thought, that!), let your classmates know all about you. Have you mailed your

answer yet? Do it now! — WALTER H. STOCKMAYER, *Acting Secretary*, Room 6-227, M.I.T., Cambridge 39, Mass.

1941

Here we are at our fifth reunion! This is really the first opportunity any of us have had to get together with the fellows we knew at the Institute back in the days before the war. At the banquet at Schrafft's on the night of June 7 and Alumni Day on Saturday, June 8, there was plenty to say and much lost ground to be gone over.

We have an extra heavy list of names of men who have dropped the title of major, lieutenant commander, lieutenant, captain, or just plain sergeant, and resumed the standard nomenclature of mister. We think it appropriate at this time to list a number of these changes, together with the man's most recent address, to permit ready contact between our classmates. If street addresses are desired, we can of course supply them, but you must enclose a bit of news about yourself with the request. Here they are: Zach Abuza, Dayton, Ohio; Carl Aronsen, San Francisco; Bill Baldwin, Tarentum, Pa.; Al Bensusan, New York City; Joe Bluhm, Boston; Joe Bogert, Richmond, Va.; Ken Bohr, Cambridge; Joe Bowman, Sulphur, La.; Bert Brown, Providence, R. I.; Sherwood Burnett, Middleboro, Mass.; George Clark, Washington, D. C.; Jim Cullison, Wyandotte, Mich.; Mason Downing, Boston; Walt Ennis, Winchester, Mass.; Paul Erlandson, Austin, Texas; Dan Flowers, Cambridge; Fred Flowers, Cambridge; Les Gott, Brooklyn, N.Y.; Ray Harper, Yonkers, N.Y.; Jim Holley, Peekskill, N.Y.; Erling Hustvedt, Weston, Mass.; Dave Jacobson, Pasadena, Calif.; Stan Jarrow, Chicago, Ill.; Bob Kellner, Brookline, Mass.; Bill Kussmaul, Jamaica, N.Y.; Ernest Lancina, Ithaca, N.Y.; Elwood McGee, St. Paul, Minn.; Eugene March, Syracuse, N.Y.; Ed Owen, Lebanon, Mo.; John Porter, Chicago, Ill.; John Sexton, Needham, Mass.; Everett Sipsey, Philadelphia, Pa.; Sam Solar, Dorchester, Mass.; Carlton Stewart, Altoona, Pa.; Walter Turansky, Goshen, N.Y.; Charlie Whitney, San Francisco, Calif.; Gill Winchell, South Lincoln, Mass.; Victor Wolf, New York City. It is quite easy, we realize, to list a group of names and new addresses; it is harder to express the feeling of freedom and general relief for those named in doffing the olive drab or the Navy serge in favor of civvies. Our best wishes are extended to all you recent converts.

Back at the Institute we find Dan and Fred Flowers. Also listed among those returned to Technology are Bert Brown, Mason Downing, Gardner Ketchum, Arnold Mengel, and Jim Tyson. Frank Mehlinger is still holding fort up in the mechanical labs. Those still in the service include your Secretary, Alan Baum, Lieutenant Commander Davis Dewey, Commander Ed Eve, Commander James Franklin, Lieutenant Irv Meyers, Lieutenant Commander Jim Neighbors, Captain Conrad Nelson, Lieutenant Commander Myron Phillips, Lieutenant Hank Pohndorf, Lieutenant Commander Lester Skowronek, Lieutenant Irv Stein, Major Ted Walkowicz, and Captain Cecil Young. Finally, we believe that we should mention potential members of the armed forces. The first man we met in

this category is "hopeful candidate" Sam McCauley of the Atlantic Refining Company in Philadelphia. Les Corsa has finished Harvard Medical School and is now out on the West Coast doctoring for Uncle Sam. Mamerto Cruz is with American Viscose and resides in Wilmington. Chifan Lee is with the Hung Weng Paper Mills in Shanghai, China.

At the May 21st dinner of the Technology Club of Philadelphia we attended a reunion of '41 (a bit premature we must admit), consisting of Bud Ackerson, Jim Holley, Sam McCauley, Herb Moody, Jim Thornton, and your Secretary, with McCauley of the 1947 draft as the only married man present. Professor Schell was the Institute's representative, and he hasn't lost a bit of the old style — it was a very interesting talk.

From John Symons: "I am one of those characters whom you secretly curse, since I haven't contributed a bit to your fund of information about the members of our Class. Primarily, the reason I haven't written before is that there isn't much of interest to report about my life since leaving the Institute [a poor excuse]. I began in the research and development department of the Maytag Company shortly after graduation, and I've been here ever since. As the Army didn't see fit to request my services because of bad eyes and a once-broken leg, my war service was confined to development work in aircraft hydraulics. We redesigned all the hydraulic cylinders for the Martin B-26 bomber, as well as a number of valves and similar items for other aircraft. We are now back in the business of making washing equipment, ironers, freezers, stoves, and other domestic implements, and the work continues to be very interesting. I am still single, and outside activities have included some private flying and work in the Civil Air Patrol, the National Aeronautic Association of the U.S.A. and so forth. I also served a term as president of the Newton Junior Chamber of Commerce, which served to satisfy my appetite for activities concerned with civic improvement. Men of our Class are quite scarce in this vicinity, although there are several other Tech men in our organization. I ran into Bailey Boettner in Corning a year or so ago; and Gordon Newmann '42 is in Des Moines, and I see him occasionally."

Austin Fisher has joined the staff of Arthur D. Little, Inc., where he will supervise chemical research. Bob Franz joined the testing department of the Eastman Kodak Company at Rochester, N.Y. Bob left the service as a lieutenant commander in February. Harold Dato now has his own company, Dato and Company to be exact, and is trying to get some housing

lined up. Victor Forzley is a stress analyst for C. T. Main in Boston. Paul Joyce, married, with one child, has left the Navy, where he was a lieutenant, and is now working for the Hammermill Paper Company in Erie, Pa. Eugene Lawrence is an Army operations officer, constructing hospitals and maintaining roads. — STANLEY BACKER, *General Secretary*, 101 Providence Road, Primos, Pa. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

1945 (10-44)

As a result of what seems to be the favorite activity of the members of 10-44, now that the war is finished, matrimonial inclinations again occupy first place in the news of the Class. The only marriage which we've heard of in the past month is that of Ensign Bruce Dodd to the former Rosalie Van Everen of Montclair, N.J., last April 22. Bruce is still on active duty in a destroyer in the Atlantic. Among the lucky ones recently engaged are Edgar Ahlberg, to Carolyn Greene Smyth of Milton, Mass., a graduate of Mount Holyoke; George Butler, an ensign, to Joan Lund, a Radcliffe graduate; Edwin Bielecki, to Phyllis Kasabuski of Arlington, Mass., and Martin Walzer, an ensign, recently returned from the Pacific, to Marilyn Meister of White Plains, N.Y. Finally, a repetition for most of you, there's the engagement of Carroll Boyce, who's been after most of us recently in behalf of the Alumni Fund, to Jean Compton, daughter of our own Dr. K. T. Compton and a senior at Connecticut College.

Two others who have returned to Technology after the well-known military interruption and were not mentioned last month are Dick Miller, who was with the Merchant Marine during the war, and John Ahearn.

Edmund Peakes is working for the McDonnell Aircraft Corporation in St. Louis, Mo. We've heard rather belatedly about the misfortune that befell Ed in the death of his wife last December simultaneously with his becoming the father of a boy, and I'm sure the whole Class joins in extending its deepest sympathies.

That's about all the news there is with which to wind up this season. We wish you all a pleasant summer with the passing hint that you hand on to any of the secretaries, preferably Jim Angell, who at present is in the best position to get it printed promptly, word of whatever tricks you might have up your sleeve about which 10-44 ought to know. — JAMES S. MULHOLLAND, JR., *General Secretary*, 1172 77th Street, Brooklyn, N.Y. *Assistant Secretaries*: RODERICK L.

HARRIS, 1 Winchester Street, Brookline, Mass.; JAMES B. ANGELL, 530 Beacon Street, Boston 15, Mass.

1945 (6-45)

As Cupid continually increases his skill with the proverbial bow and arrow, the number of eligible bachelors in the Class rapidly dwindles. In the past several months, John Sherman has become engaged to Claire Kidd; Roger Robbins to Carolyn Cross, Leon Graves to Margaret O'Connell, and Bruce Gaviller to Elinor Ames. Francis Donohue married Alice Frawley of Rosindale, Mass. Joe Tuzen married Mary Foley last month. Miss Foley was a secretary in the Military Science and Tactics headquarters during the past several years. Robert Edholm recently married Mary Gagnon of Providence. Then on June 15, your Secretary, out on his usual search for information about the Class, fell easy prey to one of Cupid's well-aimed arrows. The present Mrs. Hewson was Betsy Gurley. The wedding took place in Philadelphia.

News from other fronts is unfortunately very meager. We hear that John McCarthy is with the Federated Metals division of the American Smelting and Refining Company at Whiting, Ind. Gustav Preller was taken by the African Metals Consolidation as a mineral dressing engineer. Joe Aguila was back the other day. He has been working on power plant equipment for a company in Cuba. Dick Martin is aboard the S.S. *Russ*.

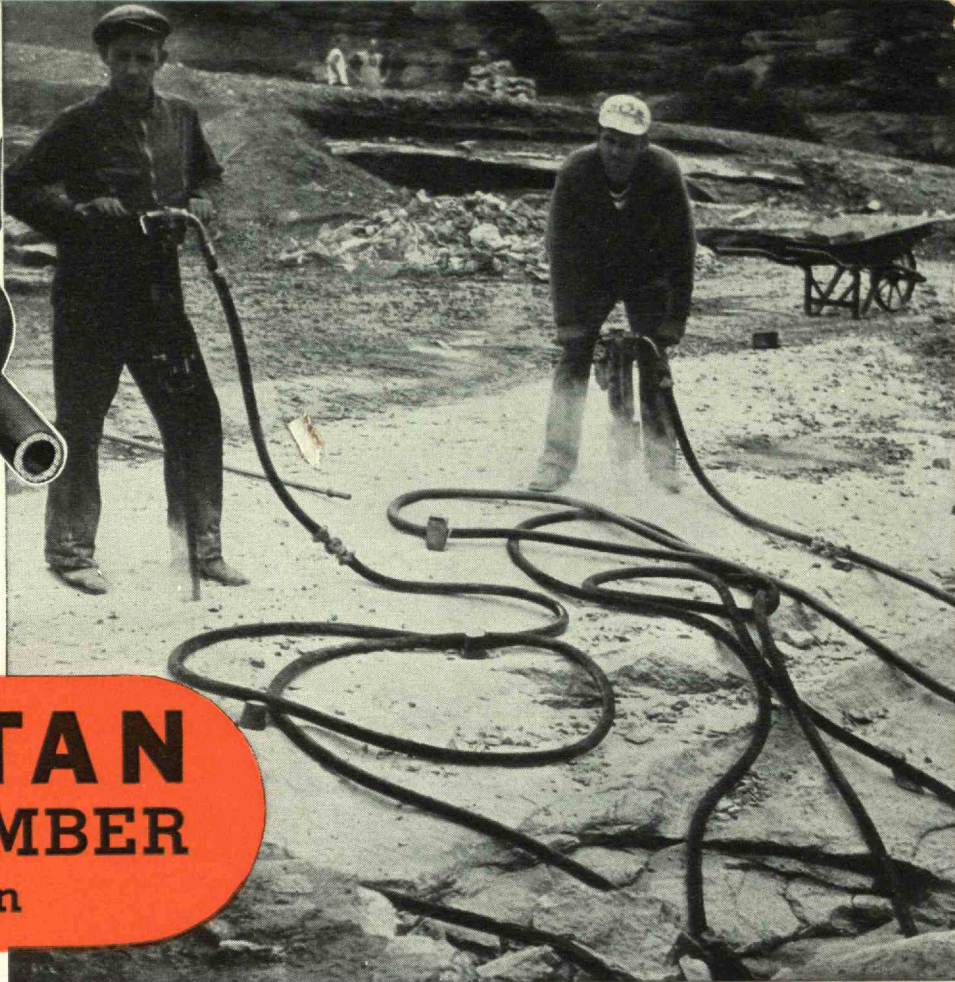
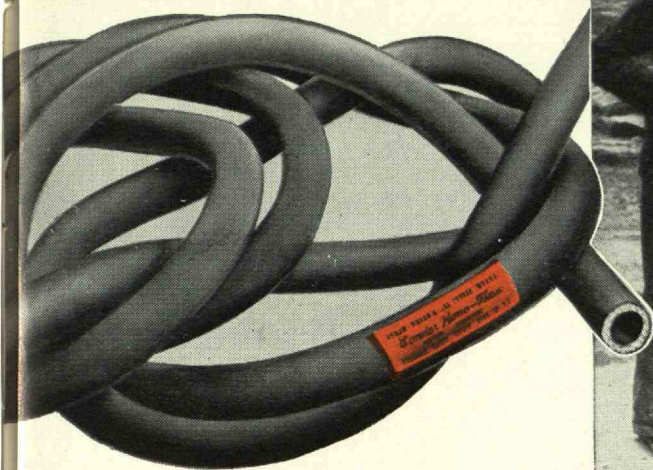
This will be all the news until fall. Meanwhile, drop a line and tell me where you are and what you are doing. — THOMAS A. HEWSON, *Acting Secretary*, Room 3-257, M.I.T., Cambridge, Mass.

1946 (2-46)

To this listening post: well, fellows, still no news from you. How am I going to spread the good news around if I don't know what it is?

One good rumor I recently received is that all our V-12 classmates will receive their discharges the last of June. Now the boys can get down to business and do some real work. Here is a late announcement, which most of you have probably heard — Glen Dorfinger's engagement to Phyllis Fisher of Clarksburg, Va. Don Burke drew good duty at Pratt and Whitney. Leo Malloy is now serving on the U. S. Cruiser *Montpelier*. Last, but not least, is the news of Johnny Green's acceptance of a fine position with Eastman Kodak's photography division. Good luck to you all. — JAMES S. CRAIG, *General Secretary*, 77 Woodruff Avenue, Scarsdale, N.Y. THOMAS F. KELLEY, JR., *Assistant Secretary*, 578 Andover Street, Lowell, Mass.

The Review is not published during the summer months following July. This issue, therefore, concludes Volume 48. Number 1 of Volume 49 will be published on October 27 and dated November.



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● This new Type V-5 VARIAC replaces the popular Type 200-C. Through entirely new design and radical changes in basic structure the new model is 25% lighter, with the same rating of 860 va. This is achieved both through improved magnetic performance of the core and less copper, and through use of aluminum in most of the structure.

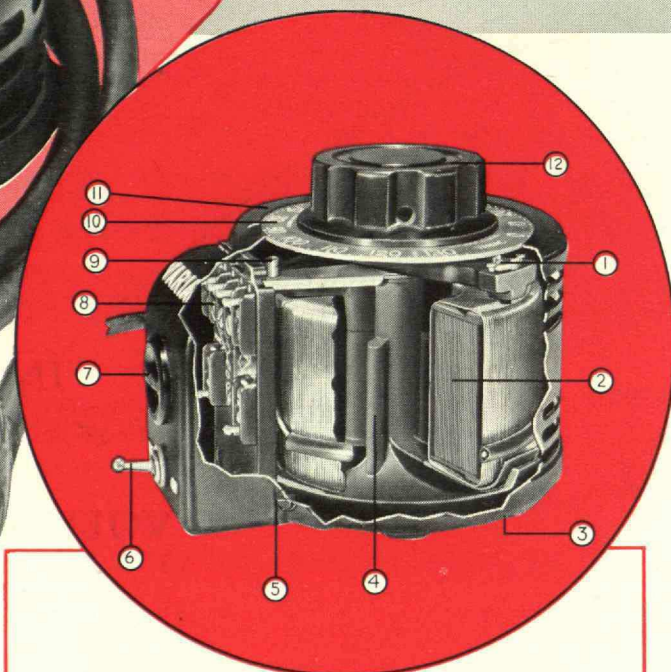
Some of the new VARIAC's many features are listed at the right. Externally, the new VARIAC has been streamlined to eliminate all sharp corners. The cord on the mounted model is arranged to be wound around the VARIAC, plugged into the outlet, and then used as a carrying strap.

This is the first radical change in basic design of the VARIAC since it was introduced by G-R almost 15 years ago. These many changes were made not to dress up the VARIAC in a new case but to provide real improvements to better its performance, increase its convenience and lengthen its life, and to be sure that when you use a VARIAC you are using the best means possible for controlling any alternating-current operated device where perfectly s-m-o-o-th variation in voltage is desired.

TYPE V-5 860 va VARIAC

TYPE	STYLE	PRICE
V-5	Basic (115-volt input) unmounted model	\$16.50
V-5M	Above with protective case around winding	17.50
V-5MT	A V-5 with protective case, terminal cover, 6-foot cord, switch and outlet	20.00
V-5H	Same as V-5, except for 115- or 230-volt input	21.50
V-5HM	Same as V-5M, except for 115- or 230-volt input	22.50
V-5HMT	Same as V-5MT, except for 115- or 230-volt input	25.00

WRITE FOR COMPLETE DATA



- 1 New G-R Unit Brush — low sprung weight reduces hammering and arcing under vibration — correct pressure provided by coil spring — holder cannot make contact with winding and cause short-circuit — brush changed quickly without tools.
- 2 New grain-oriented core of cold-finished silicon-steel with guaranteed maximum core loss — strip wound.
- 3 Three rubber feet prevent marring table top and make it unnecessary to screw units down to prevent slippage.
- 4 Aluminum structure contributes to greatly increased output per pound.
- 5 Only two screws hold both case and terminal cover — a screwdriver or a spare dime remove each in a second.
- 6 Heavy-duty switch breaks both sides of the line, in mounted models.
- 7 Polarity indication provided in convenience outlet — useful if one side of line is grounded.
- 8 Improved molded terminal plate protected by a metal, fiber-lined cover — molded barriers between terminals prevent short-circuits from whiskers on stranded wire — both screw and solder terminals — engraved circuit diagram shows normal VOLTAGES between terminals — 2 extra terminals for use with auxiliary transformers.
- 9 New resilient stop allows brush arm to bounce instead of break if you are too vigorous in rotating knob.
- 10 BIG calibration figures and extra points on dial — easy to read at a distance — easier to reset — pointer provided for panel mounting.
- 11 A single screw, readily accessible under dial, loosens shaft for reversing dial and knob to change from table to panel mounting without affecting brush or stop settings.
- 12 Newly designed, larger knob — easier to hold — easier to turn.

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